Jon Fauer ASC www.fdtimes.com NAB Edition - April 2018 Issue 87

FILM AND DIGITAL TIMES

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Canon EOS C700 FF
Panavision DXL2
Depth in Venice
VENICE in Venice
Peter Chang on VENICE
Scorpio FFA 2x Anamorphics
Nancy Schreiber, ASC on C700 FF
Anamorphic Desqueeze Math Class
Desqueezing with DaVinci Resolve
ARRI Signature Prime Launch
ARRI ALEXA LF Launch
BOLT on VENICE
Aaton-Digital
Bolt Manager
Teradek RT
BSC Expo
SmallHD

Canon EOS C700 FF
38.1x20.1mm (43.1mm Ø)

VENICE in Kosai - Sony Factory Tour
Fujifilm X-H1 APS-C with 4K Video
Fujinon MKX Zooms with X Mount
IB/E OPTICS Full Frame Expander
Angénieux EZ Full Frame Zooms
Leica Thalia Large Leica Format
VENICE in Tokyo with Band Pro
Angenieux 42-420, 36-435mm
SIGMA FF High Speed Primes
Preston Cinema Updater App
Cooke S7/i Full Frame Plus
ARRI Signature Prime Test
IB/E OPTICS Macro Raptor
Preston LR2 Hybrid Mode
Leica M 0.8 Cine Lenses
The SHAPE of VENICE
DMG Lumiere by Rosco
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AbelCine FOV Calculator 2
Tilta G2X Handheld Gimbal Rig
Mylène Girard & Charles Vallières
Teradek RT Wireless Lens Systems
DENZ MFC65 Multi Format Checker
Max Skrein Cave Diving for Red Bull
Whitepoint Optics TS70 Large Format
Graeme Nattress, RED Problem Solver
ZEISS Full Format Cinema Zooms CZ.2
Tilta Nucleus-M Wireless Lens System
Maher Maleh: Leica Thalias on VENICE
New Cooke Panchro/i Classics and S7/i
Panasonic EVA1 EVA2.0 Firmware Update
P+S Technik Anamorphics & LensChecker

Cartoni at NAB
VENICE on IMAX
AFC Micro Salon
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Cinetech Italiana
Gecko Cam News
SIGMA Art Lenses
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FILM AND DIGITAL TIMES

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

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Contents: April 2018 Issue 87 - NAB Edition

Steadicam and Camera Operator- Tetsuo Suzuki

Full Frame Canon EOS C700 FF

Canon introduces a new Full Frame Cinema Camera.

This is Full Frame democratized, FF for all.

The Canon EOS C700 FF has a new 38.1 x 20.1 mm (43.1 mm ∅) Full Frame, 18.69 megapixel (5952 x 3140) sensor. Pixel size is 6.4 x 6.4 µm. The EOS C700 FF is aspirational Full Format at an affordable price. It will be especially attractive for independent features, commercials and many other productions. EOS C700 FF records Full Frame RAW, ProRes and XF-AVC and comes with either Canon locking EF mount or PL.

Pete Abel and I were discussing this the other day. Shouldn't we call it Full Format to distinguish still photography 36x24mm from cinema? Full Frame, Large Format, VV, Full Format...let's save the discussion for the next edition.

Meanwhile, the C700 FF camera has 3 sensor modes: Full Frame, Super35 and Super16. Cropping is done in-camera. Rental houses with huge inventories of Super35 lenses will smile. Cinematographers with beloved Super16 lenses will rejoice. Dust off your venerable vintage Canon 8-64mm T2.4 and 11-165 T2.5 S16 zooms. Intercut all three format sizes on the same production.

Besides an all-new Full Frame sensor block, the camera looks and acts like the C700 (Super35) camera that was introduced at IBC in September 2015.

This is the camera that Canon whispered in September 2015.

The words in the whisper room were, "The Canon EOS C700 camera has been designed from the outset with additional sensors in mind. This may include Full Frame and other formats. Future upgrades to larger sensors and other functions have been factored into the camera design. The idea is to have one camera body that can be updated and expanded—without having to scrap the existing housing, chassis and major assemblies."

That is exactly what Canon has done with the C700 FF. In fact, users who already have a Super35 C700 can upgrade to the Full Frame version. The sensor block will be swapped at an authorized Canon service facility.

The C700 FF is a Full Frame studio and shoulder-resting camera. For RAW 5.9K, 4K or 2K uncompressed files, a Codex CDX-36150 integrated recorder is attached to the rear of the camera. It uses industry-standard Codex Capture Drives in 1 or 2 TB capacities.

The C700 FF can also record ProRes and XF-AVC codecs internally to CFast2.0 cards. Larry Thorpe, Canon Senior Fellow, explains, "To accomplish on-board image capture, the Canon C700 FF implements a unique 'Over-Sampling 4K Processing' algorithm that effectively mobilizes the significant resolution of the 5.9K sensor to produce outstanding image quality for 4K DCI/UHD and 2K/UHD recording.

"This process begins with a sophisticated deBayer algorithm to form three 18.7 Megapixel RGB frames from the 5.9K Bayer frame. That deBayer processing moves the first order sideband (from original image sensor sampling) to a higher frequency which in turn allows spectral space to implement pre-filtering prior to a subsequent downsampling to 4K / UHD RGB444 frames having enhanced MTF that results in super sharp images. This overall process also reduces aliasing and improves the subjective appearance of noise which in turn supports sharp and clean images at the higher ISO settings."

Canon Cinema EOS Evolution

Canon launched the first EOS C300 camera at Paramount Studios in Hollywood on November 3, 2011.

Masaya Maeda was Senior Managing Director at the time and is now President and Chief Operating Officer of Canon Inc. In his introductory presentation, he drew the outline of a pyramid. Consumer, prosumer and DSLR cameras occupied the base. The C300 was shown in the middle.

The top of the pyramid, representing the top of digital motion picture production, was empty. Asked when that apex would be filled, Mr. Maeda said modestly, "We are still learning. We'd like to begin a dialog with the community here in Hollywood to better understand the expectations of the industry and where we should go."

That was the "beginning of a new relationship" for Canon in Hollywood that has grown substantially ever since. It was a remarkable success story. Cinema EOS cameras appeared on sets and locations worldwide. The look, low-light capabilities, medium-format shape, EF or PL mount, quality and usability was appealing to cinematographers and rental houses.

Five months after the C300 was shown at NAB 2012, Canon introduced the 4K EOS C500. Another 5 months later, at IBC 2012 in Amsterdam, Canon showed the EOS C100 camera. Then, in April 2015 at NAB, Canon presented the C300 Mk II with internal 4K recording to CFast 2.0 cards and 15 stops of dynamic range.

As each new Cinema EOS model was introduced, whenever I saw Mr. Maeda, I would ask whether this latest camera was the top of the pyramid. He never seemed quite satisfied.

In November 2013, we met at Canon Headquarters in Tokyo. He said, "Well, of course it is our dream one day to actually be able to be the "A" camera, as you call it. But at the moment we are still newcomers when it comes to the cinema world. We believe there are still a lot of things that we need to learn and study first, and then we will be ready to take on that challenge for the high end."

And later, during an interview in September 2015 at Canon Expo in New York's Jacob Javits Convention Center, Mr. Maeda said, "Unfortunately, at this time, we have not come out with the top, high-end, most advanced camera that you have been hoping for. We are continuing to work on developing such a camera."

He was also prescient in his assessment of Full Frame. Certainly Canon had whetted the appetites of filmmakers with their 5D Mark II that offered Full Frame 24x36 video in 2008. About Full Frame, Mr. Maeda said, ""It is a challenge how far we can go with dynamic range and sensitivity using current APS-C or Super 35 size sensors. A larger sensor size is actually more advantageous because a larger pixel pitch will be more sensitive. Larger pixel sizes are an advantage in low light. And we are not restricted to the Super 35 size by the silicon wafer itself."

Last year, I talked with Hiroo Edakubo, Group Executive of Canon's Video Products Group and Hiroto Okawara, Senior General Manager of Canon's R&D and Imaging Products Group.

Mr. Edakubo described the beginnings of the C700 design: "Around the year 2013, we seriously started to do the research mainly for the C700, based on comments from customers about our C100, C300, and C500 cameras.

Mr. Edakubo continued, "These comments pushed us to think about developing the C700 we have today. The C700 was a camera that we nurtured and grew. We originally launched the C700 with a Rolling Shutter. Then we offered the Global shutter model. And now we are releasing the Full Frame model. So, customers can bring their camera to our service center to exchange the sensor as they like (for a modest charge)."

Mr. Okawara said, "The C700 was to be a high-end camera with all of the functions necessary to become an "A" camera. Then, we pushed the sensor specifications to satisfy the increased demand for now and in the future."

So here we are. Has the Canon EOS C700 FF ascended to the top of Mr. Maeda's pyramid? Mr. Maeda replied by email, "The EOS C700 is at the forefront of the Cinema EOS line and we are working tirelessly to continue its development and augment its capabilities."

EOS C700 FF Overview

The C700 FF is modular like the C700. The rugged magnesium body is extremely light weight (approximately 8 lb). The styling is distinctly Canon. Rounded edges and semi-circular sides behind the lens mount follow the Canon design legacy. The C700 FF will be equally comfortable handheld, shoulder-resting, on a head, Steadicam, gimbal rig or rigged to a car mount.

Sensor Modes and Recording Formats

The C700 FF has 3 Sensor Modes and many Resolution/Aspect Ratio choices. The Sensor Mode setting establishes the maximum recordable image area of the sensor for FF, S35 or S16 formats.

First, choose the Sensor Mode in the Menu. Next, pick the aspect ratio in the Resolution/Sampling Settings menu option.

Lens Mounts

The Canon Cinema Lock EF mount is the same ruggedized version first seen on the C300 Mk II. Flange focal depth is the usual 44 mm. Inside diameter within the lens cavity is 54 mm. A breech lock ring secures the lens in place when you rotate the tabs counter-clockwise. Do not twist the lens itself as you would on a Canon DSLR. The EF mount has Canon's familiar gold-plated lens data and power pins.

The PL mount has a flange depth of 52 mm. The inside diameter is the same as EF: 54 mm. The PL mount is fitted with Cooke /i lens metadata and power pins.

Codex Integrated Recorder

With a Codex CDX-36150 attached, the C700 FF will record uncompressed Full Frame 12-bit RAW up to 30 fps, 10-bit RAW up to 60 fps, and 2K ProRes up to 168 fps. The Codex CDX-36150 is the same model made for the C700. It attaches to the rear of the camera and records to a Codex Capture Drive 2.0 (1 TB or 2 TB capacity), the same familiar media used in Alexa and VariCam35.

Dynamic Range and EVF

The Canon C700 FF has 15 stops of dynamic range.

The sharp 1920x1080 OLED Viewfinder (EVF-V70) was introduced on the original C700. It has an HDR simulated picture with a "stretched" dynamic range for increased shadow detail and highlight retention. This is accomplished without the requisite increase in brightness of true HDR.

Anamorphic

C700 FF supports full height 18mm Super35 format anamorphic lenses. The C700 FF desqueezes the anamorphic image electronically for 2.39:1 in the viewfinder and on connected monitors.

And, as some of the first crews shooting with the camera found out, some 2x anamorphic lenses actually cover the entire C700 Full Frame 20.1 mm picture height, 32.24 Ø. (Cooke Anamorphic /i lenses, for example, cover an image circle of 33.54mm Ø. So, the C700 FF can capture a 2x squeezed image onto a sensor area of 24.02 x 20.1mm. Of course, you could also fill the entire C700 FF 20.1 x 38.1 mm sensor area and shoot with Hawk65 1.3x Anamorphics or Ultra Panavision 1.25x Anamorphics lenses.

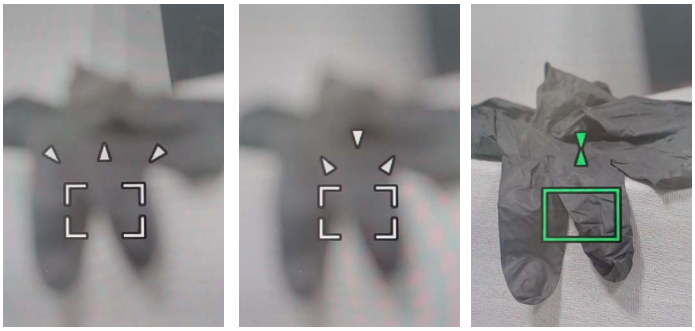
Mounting

There are enough 3/8-16 and 1/4-20 threaded holes on the top and bottom to satisfy almost any mounting or rigging situation. The top handle attaches with four screws in many positions and balances extremely well. Focus tape hooks adorn both left and right sides. Clearly, the designers at Canon listened to the requests of camera crews.

The shoulder pad consists of two sections that adjust to fit the width of any camera operator's shoulder. It has industry-standard Hirth tooth rosettes on each side and sockets with 15mm rods in front. The camera comes with a standard rear V-lock battery mount. An Anton Bauer Gold Mount adapter can also be used.

Focus

Dual Pixel CMOS AF and Focus Guide work with enabled EF lenses.



Since Full Frame lenses have a shallower depth of field than their Super35 counterparts (at the same distance and field of view), the Focus Guide is very helpful. Camera operators who work documentary style, or without a Focus Puller, will enjoy the up and down arrows in the viewfinder. These electronic indicators clearly show the required direction of rotation of the lens for sharp focus on the subject. (down arrows mean focus closer, up arrows mean focus farther away). When focus is achieved, the arrows and focus guide turn green. For run-and-gun productions where autofocus is desired, Canon's accurate Dual Pixel CMOS AF is an alternative mode that ensures continuous and precise focus.

The new Canon EOS C700 FF is a camera for all seasons, with lots of reasons to embrace Full Frame while still being backwardly compatible with S35 and S16. It is a rugged and expandable high-end camera system that promises to propel Full Frame even more rapidly into everyone's vocabulary.

The EOS C700 FF will ship in July at a list price of $33,000.

Full Frame Canon C700 FF Sensor Modes

The Canon EOS C700 FF has a Full Frame 20.8 Megapixel CMOS sensor. The maximum effective image area is 38.1 x 20.1 mm (41 mm diagonal), 18.69 megapixels, 5952 x 3140, which is a 1.89:1 (17:9) aspect ratio.

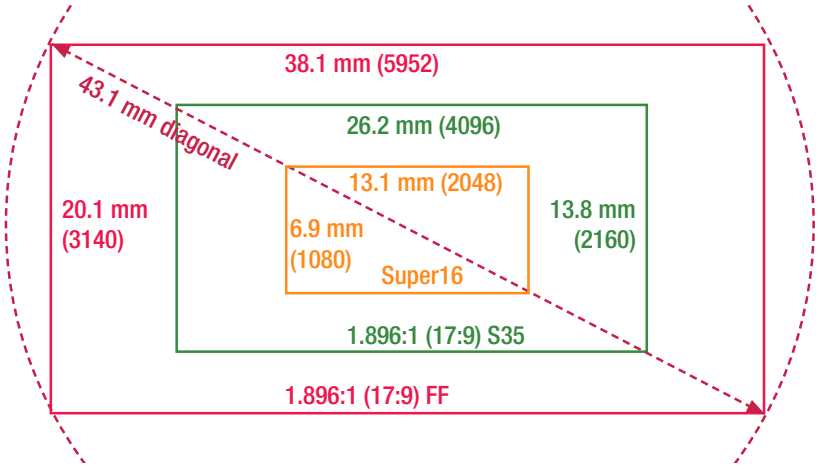
In comparison, the original C700/ C700 PL camera has a Super35 11.54 megapixel sensor. Its maximum effective image area is 28.9 x 15.2 mm (32.6 mm diagonal), 8.85 megapixels, 4096 x 2160. Pixel pitch is the same on both cameras, at 6.4 microns.

The C700 FF has three sensor modes: Full Frame, Super35 and Super 16.

The C700 FF Sensor Mode setting establishes the maximum recordable image area of the sensor for FF, S35 or S16 formats.

First, you choose Sensor Mode in the Menu and then pick the aspect ratio in the Resolution/Sampling Settings menu option.

Sensor Modes

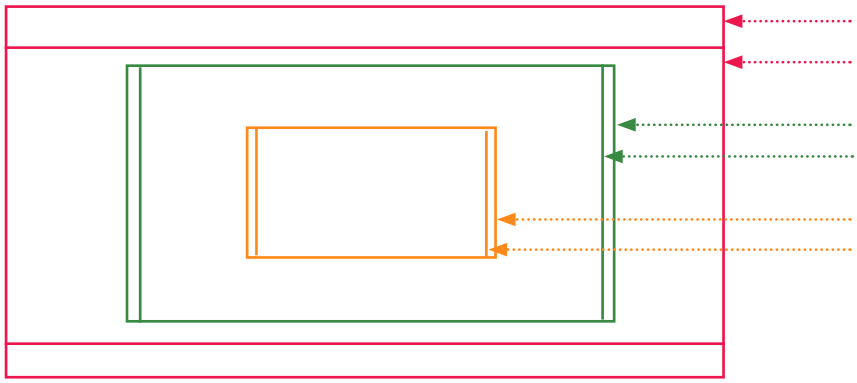


Full Frame = 38.1 x 20.1 mm
43.1 mm Ø

S35 = 26.2 x 13.8 mm
29.61 mm Ø

S16 = 13.1 x 6.9 mm
14.81 mm Ø

Recording Formats: Relative Sizes



5.9K 17:9 (1.89:1 Full Frame)
5.9K 2.35:1 or 2.39:1 (Spherical Widescreen)

4K 17:9
UHD 16:9 (1.7:1)

2K 17:9
FHD 16:9 (1.7:1)

C700 FF desqueezes anamorphic images and we'll get into aspect ratios, formats, FF anamorphic and S35 anamorphic framelines in a future edition.

Canon EOS C700 FF, cont'd

Camera left profile

Camera right profile

Front

Rear

Top

Bottom

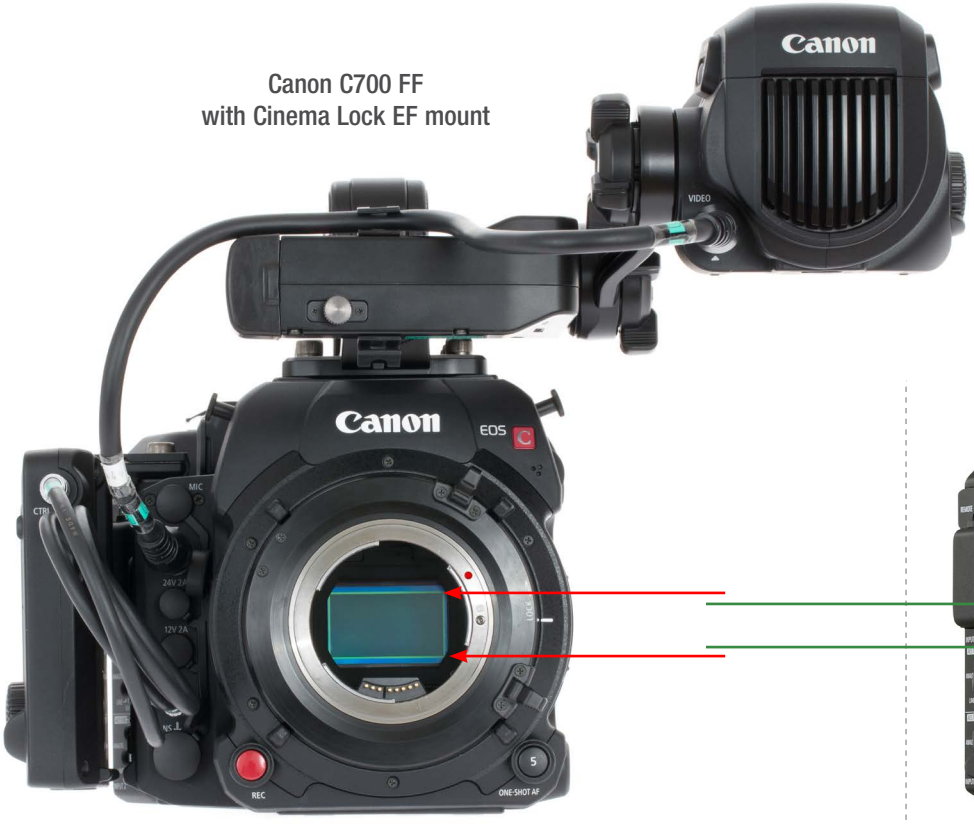
Camera left with CN-E20mm T1.5 L F

Camera right with CN-E20mm T1.5 L F

Comparing C700 FF with C700 S35

- The Canon C700 FF looks almost the same as the original C700 (Super35) models. The main difference, of course, is the sensor.
- C700 FF active sensor area is approx. 18.69 megapixels (5952 x 3140) occupying an area of 38.1 x 20.1 mm (43.1 mm Ø).
- C700 S35 active sensor area is approx. 8.85 megapixels (4096 x 2160) occupying an area of 28.9 x 15.2 mm (32.6 mm Ø).

Canon C700 FF
with Cinema Lock EF mount



C700 FF Sensor
38.1 x 20.1 mm
43.1 mm Ø

Canon C700 S35
with Cinema Lock EF mount

C700 S35 Sensor
28.9 x 15.2 mm
32.6 mm Ø

Canon C700 comes with the choice of two mounts: EF or PL. The Cinema Lock EF is a more rugged version of the ones found on still cameras. It has a locking ring and supports bigger, heavier lenses. FFD=44 mm. ID=54 mm.

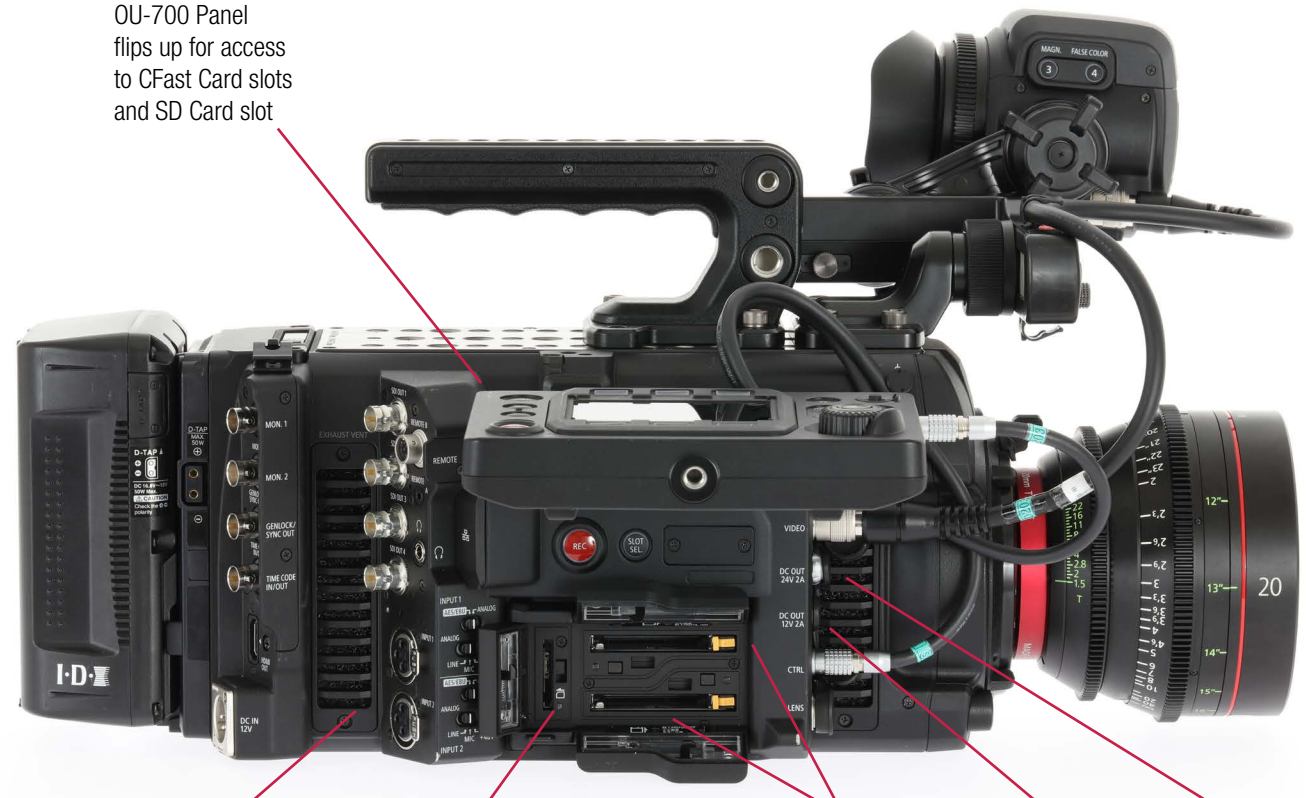
The PL Mount has Cooke /i lens metadata and power pins (in the usual 12 o'clock position). Lens data can be recorded and displayed on monitors, which is helpful for camera assistants to check depth of field and for script supervisors to note focal length, aperture and zoom settings. FFD=52mm. ID=54mm.

You can use Full Frame, Super35 and Super16 lenses on the C700 FF. There are 3 crop modes: FF, S35 and S16. The S16 image circle is around 14.5 mm Ø.

Canon C700 S35
with PL mount

Canon EOS C700 FF Jump Start

Canon EOS C700 FF Jump Start



Canon EOS C700 FF Connections

Front

Rear

C700 FF Over Sampling

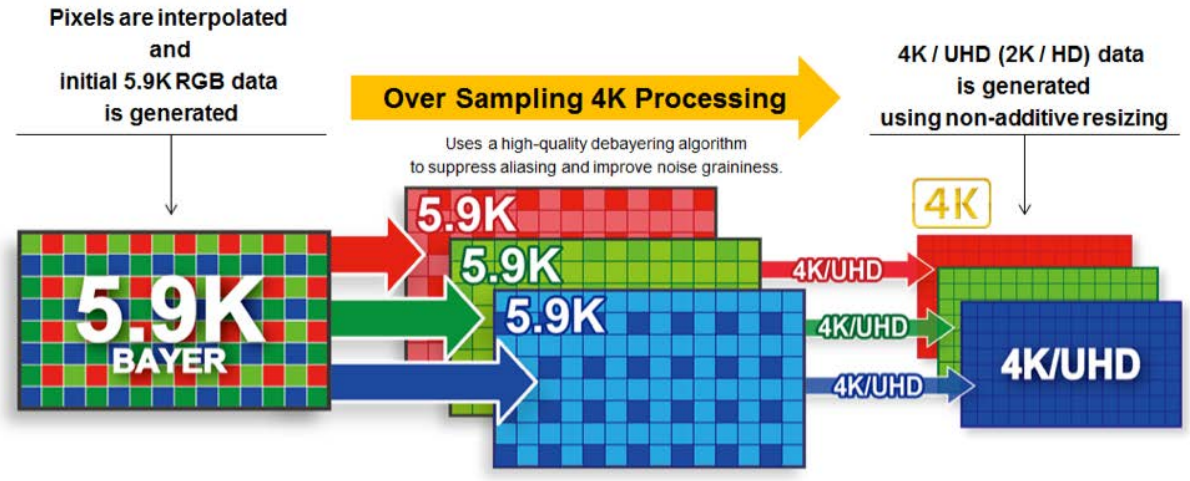


Diagram courtesy of Canon.

Canon EOS C700 FF Specs

32 Models	EOS C700 FF / EOS C700 FF PL
Sensor	CMOS sensor with 6.4 x 6.4 micron photosites
Sensor Modes	Full Frame / Super 35 (Crop) / Super 16 (Crop)
Total pixels	Approx. 20.8 Megapixels (6062 x 3432)
Effective pixels	Approx. 18.69 megapixels (5952 x 3140) for 5.9K RAW (Capture Drive mode), 4K or 2K (DCI) Approx. 17.52 megapixels (5580 x 3140) for UHD 3840 x 2160 or 1920 x 1080 Full HD
Effective Image area	38.1 x 20.1 mm (43.1 mm diagonal) Note: EOS C700/C700 PL was 28.9 x 15.2 mm (32.6 mm diagonal) in RAW (Capture Drive mode)
Lens mounts	EF (cinema lock type) or PL Mount
ISO	160 - 25,600 (and 100 - 102,400 with expanded sensitivity)
Size	Approx. 6.6 × 6.1× 12.9 in (167 × 154 × 327 mm)
Weight	with EF Mount, approx 7.6 lb (3.4 kg). with PL Mount, approx 8 lb (3.6 kg)
Internal ND filters - 5 densities	Clear, 2, 4, 6, 8 10 stops with motorized push-button selector (ND.0, ND.6, ND1.2, ND1.8, ND2.4, ND3.0
Viewfinder	OLED Electronic View Finder EVF-V70, sold separately
Menu display	3.0-inch (7.66cm on the diagonal) color liquid crystal, approx 1.036 million dots.
Recording media	CFast cards (2 slots) for XF-AVC and ProRes SD card for XF-AVC proxies and JPEG photos Codex Capture Drive 2.0 for RAW
Video formats	XF-AVC/ MPEG-4 AVC/H.264 ProRes Apple ProRes Codec RAW uncompressed with Codex CDX-36150 Recorder
Audio recording	Linear PCM (24 bit- 48kHz) 4-channel
XF-AVC onto internal CFast Cards	XF-AVC 4096x2160 / 3840x2160 422 10-bit to 60 fps XF-AVC 2048x1080 / 1920x1080 422 10-bit to 60 fps XF-AVC 2048x1080 / 1920x1080 444 10-bit and 12-bit to 60 fps
ProRes onto internal CFast Cards	ProRes 422 HQ 4096x2160 / 3840x2160 10-bit to 30 fps ProRes 422 HQ 2048x1080 / 1920x1080 10-bit to 60 fps ProRes 4444 2048x1080 / 1920x1080 12-bit to 60 fps
RAW and ProRes onto Codex Capture Drive with Codex Integrated Recorder (CDX-36150)	5.9K RAW Full Frame 5952x3140 to 60 fps 5.9K RAW Spherical Widescreen 5952x2532 to 60 fps ProRes 422 HQ 4096x2160 / 3840x2160 10-bit to 60 fps ProRes 422 and ProRes 422 HQ 2048x1080 / 1920x1080 10-bit to 168 fps ProRes 444 and ProRes 4444 XQ 2048x1080 / 1920x1080 12-bit to 60 fps
Gamma modes	Canon Log 3 / Canon Log 2 / Canon Log / Wide DR / etc
Color space	Cinema Gamut / BT.2020 / DCI-P3 / BT.709
LUTs	BT.709 / BT.2020 / DCI / ACESproxy / HDR-ST2084 / and others
Slow & Fast Recording	Slow motion up to 168 fps
White Balance	AWB, 2,000K-15,000K, -20CC to +20CC, Daylight, Tungsten, Presets A and B
Time Code	Drop frame in 59.94 Hz mode, non-drop frame, rec run, free run, regen
Rear Connectors—Input	Timecode In/Out, Genlock/SYNC OUT, REMOTE (A/B), MIC, 2x XLR Audio
Rear Connectors—Output	2x MON, 4x SDI-OUT, HDMI OUT, headphones, Genlock/SYNC OUT, TIME CODE input/output, VIDEO
DC Power In	12V DC XLR 4-pin on camera body / 24V DC (10-34V) via Fisher 2-pin on Codex CDX-36150 Recorder
Accessory Power	DC 24V 2A DC 12V 2A D-Tap Connector
Accessories	OLED Electronic View Finder EVF-V70, Remote Operation Unit OU-700, Shoulder Support Unit SU-15, Shoulder Style Grip Unit SG-1, Remote Operation Unit Cable UC-V75, Remote Operation Unit Cable UC-V1000, B4 mount adapter MO-4E / MO-4P Remote Controller RC-V100, Wireless Transmitter WFT-E6, GPS Receiver GP-E1, Unit Cable UN-5/UN-10, Codex CDX-36150 (Codex Recorder for Canon C700), Codex Capture Drive 2.0 Media
Contact Canon	usa.canon.com/provideo

These are not final specifications and are subject to change, or worse, FDT Typos.

Canon EOS C700 FF Recording Formats

Format	Recording Media	Sensor Mode	Resolution	Signal Type	Bit Depth	Maximum Frame Rate
Cinema RAW	Codex Recorder CDX-36150	Full Frame	5.9K Full Frame	RGB Bayer RAW	---	60 fps
			5.9K 2.35:1 Spherical Widescreen		---	60 fps
		Super35mm (Crop)	4K		---	75 fps
		Super16mm (Crop)	2K		---	168 fps
ProRes	CFast	Full Frame Super35mm (Crop)	4K / UHD	ProRes 422 HQ	10 bit	30 fps
			2K / FHD	ProRes 422 HQ	10 bit	60 fps
				ProRes 4444	12 bit	60 fps
		Super16mm (Crop)	2K / FHD	ProRes 422 HQ	10 bit	168 fps
				ProRes 422	10 bit	168 fps
	Codex Recorder CDX-36150	Full Frame	4K / UHD	ProRes 422 HQ	10 bit	60 fps
			2K / FHD	ProRes 422 HQ	10 bit	60 fps
				ProRes 4444 XQ	12 bit	60 fps
				ProRes 4444	12 bit	60 fps
		Super35mm (Crop)	4K / UHD	ProRes 422 HQ	10 bit	60 fps
			2K / FHD	ProRes 422 HQ	10 bit	72 fps
				ProRes 4444 XQ	12 bit	60 fps
				ProRes 4444	12 bit	60 fps
		Super16mm (Crop)	2K / FHD	ProRes 422 HQ	10 bit	168 fps
				ProRes 422	10 bit	168 fps
XF-AVC	CFast	Full Frame	4K / UHD	YCC422 Intra	10 bit	60 fps
			2K / FHD	YCC422 Intra	10 bit	60 fps
				YCC422 LongGOP	10 bit	30 fps
				RGB444 Intra	12 bit	60 fps
					10 bit	60 fps
		Super35mm (Crop)	4K / UHD	YCC422 Intra	10 bit	60 fps
			2K / FHD	YCC422 Intra	10 bit	72 fps
				YCC422 LongGOP	10 bit	60 fps
				RGB444 Intra	12 bit	60 fps
					10 bit	60 fps
			FHD Interlace	YCC422 LongGOP	10 bit	60i / 50i
		Super16mm (Crop)	2K / FHD	YCC422 Intra	10 bit	168 fps
				YCC422 LongGOP	10 bit	60 fps
			FHD Interlace	YCC422 LongGOP	10 bit	60i / 50i
XF-AVC Proxy)	SD Card		2K / FHD	YCC420 LongGOP	8 bit	~ 60 fps

When a B4 adapter is attached, only XF-AVC/Crop/FHD/Interlace (60i/50i)/YCC422/LongGOP/10 bit recording is supported.

Canon CN-E20mm T1.5 L F Full Frame Prime

In addition to announcing the new C700 FF Camera, Canon is also releasing a new prime in their ever-growing family of Cinema EOS Full Frame lenses. The new Canon CN-E20mm T1.5 L F (L Series, F as in Full Frame Prime Lenses) is the 7th prime in the set.

Contacts in the lens connect with pins in the Canon EF mount (on Cinema EOS cameras) to supply metadata that is visible in the finder and on monitors with information about focus and aperture. This lens data also works with focus assist in the C700 FF with arrows as guides in the viewfinder.

Canon EF Cinema Primes (CN-E Series)

Focal Length (mm)	**14**	**20**	**24**	**35**	**50**	**85**	**135**
Widest Aperture	T3.1	T1.5	T1.5	T1.5	T1.3	T1.3	T2.2
MOD	8” 0.2m	12” 0.3 m	12” 0.3 m	12” 0.3 m	18” 0.45 m	37” 0.95 m	39” 1.0 m
Front Diameter	114 mm	114 mm	114 mm	114 mm	114 mm	114 mm	114 mm
Front Filter Thread	none	105 mm	105 mm	105 mm	105 mm	105 mm	105 mm
Image Circle	43 mm	43 mm	43 mm	43 mm	43 mm	43 mm	43 mm
Mount	EF	EF	EF	EF	EF	EF	EF
Weight	1.2 kg 2.65 lb	1.2 kg 2.65 lb	1.2 kg 2.65 lb	1.1 kg 2.43 lb	1.1 kg 2.42 lb	1.3 kg 2.87 lb	1.4 kg 3.09 lb
Length	94 mm 3.7”	101.5 mm 4 in	101.5 mm 4 in	101.5 mm 4 in	101.5 mm 4 in	101.5 mm 4 in	115.6 mm 6.6 in

Nancy Schreiber, ASC on C700 FF

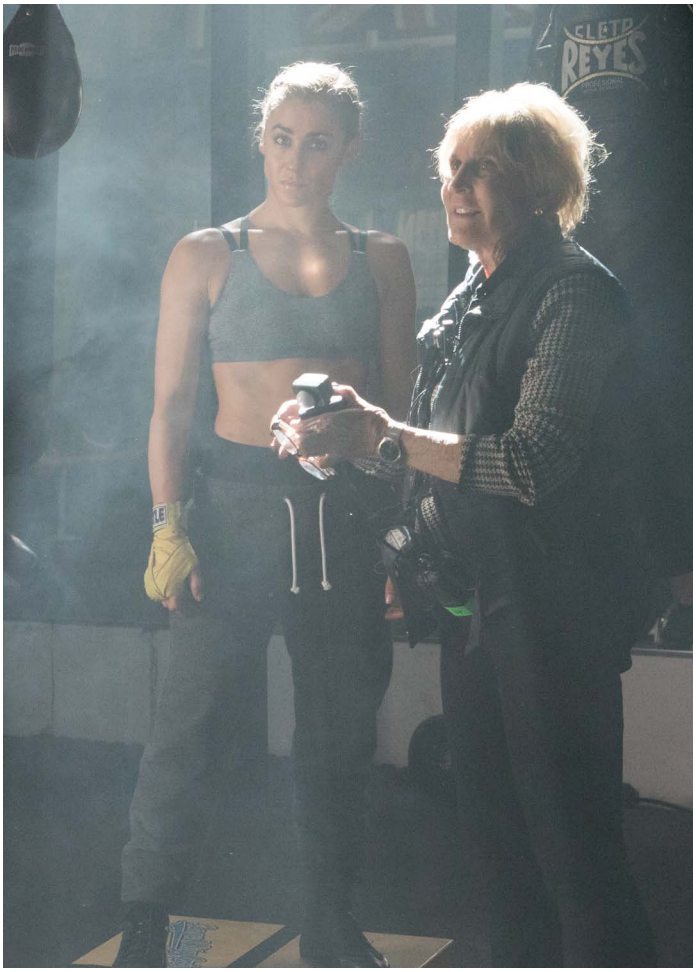
Nancy Schreiber, ASC shot with three C700 FF pre-production cameras in the beginning of March. Two had PL mounts and one came with EF.

Nigel Dick was the writer/director. Focus pullers were Gunnar Mortensen and Greg Benitez. Gunnar probably has logged more hours on the C700 S35 camera than most mortals. Camera/Steadicam Operators were Dave Chameides (boxing scenes) and Ric Griffith (motorcycle scenes). Scott Ray was Gaffer, Lauren Guiteras was Electrician. Sean Crowell was Key Grip and Nina Ham was Grip. Steve Tobenkin produced.

The story is an "anything you can do I can do better" joyride. Two boxers are warming up in a smoke-filled, beams of light interior. We see one from the back. She turns. The other boxer, a man, is talking to a trainer. There's tension between them. They look at each other. She hits a bag. He spars with the trainer. The workout over, they jump onto motorcycles. An acrobatic bike ballet begins. We end at dusk in the City of Angels as they stand together contemplating the skyline.

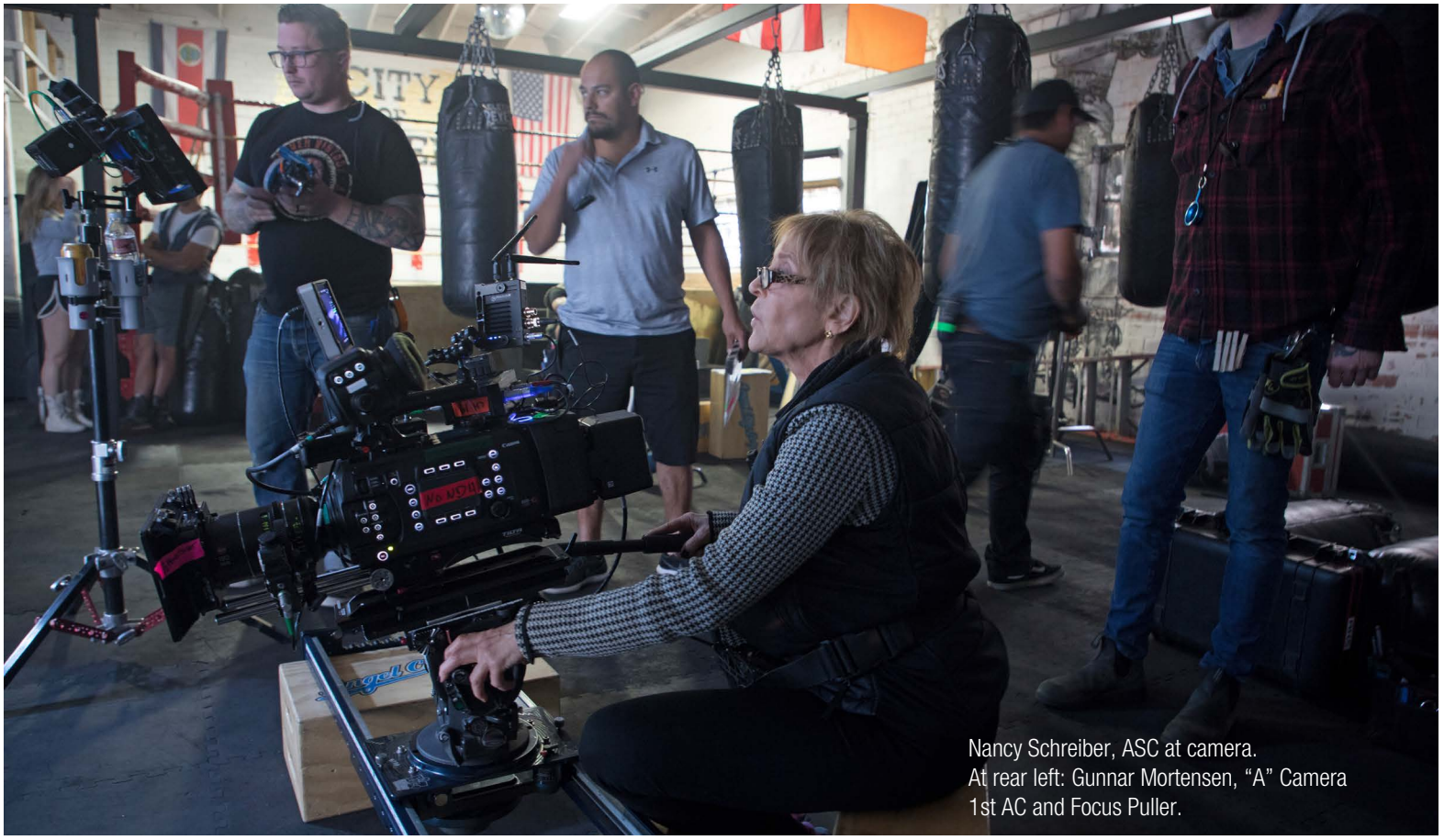
Nancy described the C700 FF: "It is ergonomic, lightweight, has a bright EVF and is fast and easy to convert from Studio to Steadicam. I was pleasantly surprised by its size, maneuverability and intuitive menus.

"Full Frame sensors are a growing trend and seem to be here to stay. The price point is right and I feel that it is the best Canon cinema camera to date. I was fortunate to have two top-notch focus pullers working with us. The focus was always spot on, which was no easy feat, as we were shooting without rehearsals, with a full frame sensor combined with anamorphic lenses, usually wide open."



Nancy Schreiber, ASC at camera in foreground. Director Nigel Dick in the back with baseball hat sitting on dolly next to Dave Chameides, Camera Operator.

Nancy Schreiber said, "I rated the camera at 800 ISO, and under-exposed ½ stop. The 2K Xenons were reading 6 stops over and highlights held impressively. Night exteriors were rated at 3200 ISO, without noise. We used a variety of lenses: Large Format Leica Thalias, Zeiss CZ.2, Hawk Anamorphics and Angenieux anamorphic zooms and the new Canon CN-E20mm T1.5."



Nancy Schreiber, ASC at camera.
At rear left: Gunnar Mortensen, "A" Camera 1st AC and Focus Puller.

Gunnar Mortensen, who uses the tag line "sharp wit and sharper focus," said, "The C700 FF is intuitive, ergonomic, modular and well-balanced. The image is filmic. I liked the low light sensitivity and internal ND filters. Going forward, cameras can either have pixels that are smaller or chips that are larger. Full Frame gives us an immersive field of view and a pleasing depth of field."

Panavision DXL2 London Launch

BSC Expo, London. Friday, Feb 1. Panavision launched their new Millennium DXL2 8K Large Format camera. Sensor size: 40.96 x 21.60 mm (46.31 mm diagonal). It's a major upgrade from the original DXL: new sensor, improved images, modules and more.

The Panavision DXL2 has a RED MONSTRO 8K VV sensor with greater dynamic range, improved image quality and better shadow detail. The native (factory recommended) ISO setting is 1600. ProRes 4K can be recorded up to 60 fps. DXL2 has a built-in Preston MDR (Wireless FI+Z Motor Driver/Receiver). It's a custom-designed module on the camera's front right side. Furthermore, each DXL2 camera can ship with a Preston Light Ranger 2 Focus Assist/Auto Focus unit.

The DXL2 with LiColor2 science (LiColor2) streamlines 8K production-to-post with convenient and quick access to the RAW "digital negative" while letting you work in "direct to edit" mode.

Specs

- RED MONSTRO 8K VV sensor
- Sensor Size: 40.96 x 21.60 mm (46.31 mm diagonal)
- Lens mount: SP70. 40mm flange focal depth, accepts Panavision Primo 70 and Artiste lenses. Almost all other Panavision and cine lenses fit with mounts or adapters.
- HDR and improvements in image quality and shadow detail
- Native ISO: 1600. Power: 24 V DC
- ProRes 4K up to 60 fps
- Viewing in log format using Light Iron color science.
- Integrated PX-Pro color spectrum filter custom-made for the DXL offers an increase in color separation and color accuracy.
- Built-in Preston MDR module — consisting of wireless receiver and lens motor driver (Focus, Iris, Zoom) paired to Preston Hand Units and Preston Light Ranger 2.
- Each DXL2 camera can ship with Preston Light Ranger 2 focus assist/auto focus unit
- Anamorphic flare attachment (AFA) available to introduce flares to spherical lenses.

Since its introduction at Cine Gear 2016, the DXL has been used on over 20 feature films, and many television shows, commercials and music videos. DXL2 cameras are ready to rent now from Panavision worldwide. *panavision.com/dxl*

A Lighter Ranger 2 would have helped here. I was so excited to see the new DXL2 that I neglected to calculate Depth of Field to keep Michael Cioni, Senior VP of Panavision (top) and Jeff Allen, Managing Director of Panavision Europe (above), in focus. Below: front view with MDR module.

VENICE in Venice on IMAX with Peter Chang

Peter Chang is a Director, Producer and Cinematographer with impressive credits on giant screen productions. He is a founder of Golden Gate 3D, a production company of immersive content. He won the Best Large Format Cinematography Award for Jerusalem *(2014) and* National Parks Adventure *(2016). Peter just wrapped in Venice (the city), with VENICE (the camera), where he produced the large format production for IMAX and giant screens, "Venice: La Serenissima."*

JON FAUER: How did your VENICE in Venice project begin?

PETER CHANG: I had been tracking the development of the VENICE and attended the launch event in L.A. I wanted to test the camera specifically for giant screen IMAX projects. For that purpose we needed the 6K Full Frame option on the camera.

I had been planning to shoot the annual Carnival celebration in Venice, Italy. We brainstormed the concept with Sony and off we went. It was a no-brainer really, given that the camera's called VENICE. This production has the title, "Venice: La Serenissima."

What will be the ultimate release?

A short version should premiere at NAB. It's part of a much bigger project that is in progress. The Venice sequences provided a great opportunity for us to try out the VENICE Full Frame camera and some Full Format lenses. Carnival is a visually spectacular celebration born out of Greek and Roman festival traditions. It is one of the highlights of the year for Venice, with three million visitors. The canals and streets are filled with color, masks, costumes, acrobats, street artists and musicians.

What was the style of the film"

It is very much documentary style, capturing the event, the carnival celebration, festivities and costumes. We captured the city from the water, using boats. We also got scenes of local culture, mask making, gondola building, glass blowing and slices of life during our time in Venice.

What lenses did you have?

This served as a camera and lens test for us. I think it's important to test the camera with different lenses on an actual shoot to see how it behaves. From a filmmaking standpoint, I wanted to see how these Full Frame lenses performed. We had Cooke S7/i, Leica Thalia, Sigma FF Cine Primes and a Focus Optics Ruby Zoom.

The Focus Optics Ruby 14-24mm T2.8 has been a favorite of ours on giant screen projects. It's a rehoused Nikon. For the giant screen, we tend to favor wider angle shots. The widest available Cooke S7/i was 25mm T2, the Leica was a 30mm T2.9, and we had Sigma FF Cine 14mm T2 and 20mm T1.5 primes. We did mix it up with some longer lenses.

The Sony E-mount wasn't functional yet but Sony's 12-24mm f/4 G, 16-35 f/2.8 GM and 24-70 f/2.8 GM are super sharp and have interesting bokeh. Sigma has a 12-24 f/4 Art lens and recently announced E-mount primes. Maybe they'll do more Cine versions. For giant screen, I'm looking forward to the Cooke s7/i 18mm and the Leica Thalia 16mm and 24mm.

With VENICE's E-mount, you don't have to wait for somebody to rehouse and cinematize a good still lens. Especially at ultra wide angles, you probably aren't pulling focus that much.

We used cine glass in PL mounts on this particular shoot. But the E-mount opens up possibilities with just about any lens out there. I think there are a lot of very interesting wide angle still lenses that you can use once the VENICE E-mount is operational and that opens up a world of adapters as well.

How did you frame and crop?

The IMAX aspect ratio is 1.43:1. That is pretty close to the VENICE native Full Frame aspect ratio of 1.5:1. For giant screen IMAX productions, that means cropping a lot less on the sides. It's a taller aspect, which is great, so we lose less resolution for the format. We just crop in post, using Resolve, Premiere or other software.

Describe the look and logistics of large format cinematography.

The look has a lot to do with framing and camera movement. We're often shooting wide shots so there's a lot of information. The challenge is to get clean frames. For example, during Carnival, when you have people dressed up in period costumes and masks in the Piazza San Marco, there are massive crowds. It's shoulder to shoulder. We did our best with that. Of course, there's a lot of sky when framing for the dome, and if you don't have an interesting sky, it can be tough. With Large Format on an IMAX screen, the effect is considerable when you have a much wider frame and a wider field of view. There's just much more to see. It's more immersive and we're always striving for a wider image. Another challenge is to find a way to frame it properly. The horizon and visual center of frame is lower. Camera moves tend to be slower and forward-moving in order to spare the audience a dizzying and potentially nauseating experience on the giant screen.

On the VENICE camera, what was your ISO and frame rate?

We rated it at 500 ISO and shot at 24 fps, 6K Full Frame and recorded X-OCN ST files on VENICE's AXS-R7 onboard recorder. (X-OCN is a visually lossless, streamlined and efficient codec.) We were able to manage the X-OCN data and play it back nicely with DaVinci Resolve on our laptops. We transcoded and graded everything to ProRes with Resolve for our dailies. The footage is very impressive. Mick Pacifici, our First AC, was also our DIT on set and he was managing the dailies.

What were your impressions of the Sony VENICE camera?

I think it's an astonishing camera. The internal ND system was one of our favorite things, and it really enabled us to move quickly in constantly changing lighting conditions. It saved a lot of time. We put the camera through its paces in some physically tough conditions. We were filming primarily in freezing temperatures with a lot of humidity, on boats, in the rain. Lighting conditions were often harsh, with bright, blinding winter light that would reflect off the white stucco and marble building walls and the water. There was lots of contrast going through dark tunnels and emerging into bright sunlight. The dynamic range of the camera held everything and then, with the internal NDs, we could really fine tune things, which was phenomenal. I wish every camera had that.

And then, of course, once you look at the image itself, it's just, "Wow." VENICE has a beautiful and impressive image in terms of color. Its dynamic range is some of the most we've ever seen. Highlight range and shadow detail are incredible. The amount we've been able to pull from the files has been impressive. VENICE is a lovely camera. Of course, the lenses help with that as well.

How did you get started and wind up in IMAX and giant screen and large format?

I started out in feature films and then moved into documentaries, initially television, and then, from there, got into 3D and giant screen IMAX projects. I've been doing that now for seven years. Initially I worked as a cinematographer and then, about three years ago, embarked on directing and producing my own giant screen film, "Cuba." It is scheduled for release later this year and we've been in production over the last three years on that.

That's a long time.

These films take an average of five years to make. Sometimes longer. And Cuba's a very challenging place to work, but the upside is that it allowed us to use a variety of cameras and lenses as they've come out during that time. For example, "Cuba" is a film that's being supported by the top giant screen IMAX dome theaters and they have extremely high standards when it comes to capture. We are always on a hunt for what is the best you can get at any given moment in terms of camera and lenses.

I'd love to see more wide angle glass for these larger sensors. I'd love to see 4:3 aspect ratio, 100 megapixel and larger sensors in a motion picture camera. As part of this pursuit in resolution, we've been exploring stitched arrays of cameras. But, ideally we would just have a single sensor that could carry the resolution that we need.

Is this new wave of large format cameras one of the greatest changes in the business since films went from silent to talkies?

I'm biased, but, yes, I agree. For a long time, at least in the large format documentary world, it was just 15/70mm IMAX film and it was an incredible barrier to entry with insanely high costs. Then in the last five years, it started to shift into a hybrid film and digital combination, like "Jerusalem."

Now it's gone all digital and the cameras have finally caught up. I think we're finally there and it's really going to open up new styles of production. There are new subjects, stories and new filmmakers entering the space and working on this incredible canvas. When we talk about giant screen IMAX, it's really two formats. You have flat screen 3D, which most people are familiar with in their local multiplex, but also the 2D dome experience, which used to be called Omnimax. The dome provides a unique experience. Some might even call it more immersive than 3D. Traditionally, it was mostly IMAX film (70mm IMAX Format: 70 x 48.5mm, 15-perf, running horizontally).

The domes are transitioning into digital now, in terms of projection, but it's also the most unforgiving in terms of resolution. When you think about a digital Super 35 image, and you crop it to 1.43:1, that's really not going to hold up as well on the dome as higher resolution, larger sensor images.

I think it's revolutionary, and it's akin to what you were saying, especially with regard to large format, giant screen, and IMAX, and certainly these large format cameras will have a huge impact. We're all very excited.

Photos in this article courtesy of Peter Chang, Director, Producer, Cinematographer (above). *Large format production for IMAX and giant screens by Peter Chang. gg3d.com*

Logistics of VENICE in Venice

From left: Michel "Mick" Pacifici, First AC & DIT. Peter Chang. Violet Angell and David Battistella, Producers. Pedro Guimaraes, SOC, Camera and Ronin Operator. Here, Ronin is being operated as a remote head.

By David Battistella, Producer of "Venice: La Serenissima."

Logistics

Venice is an icon. Filming in the city presents specific challenges. It is like no other place in the world. While there is a possibility of walking to locations, there are many literal hurdles. The city has over 1500 bridges. For a crew on the move, that can be complicated. When you are chasing light, as we were on this shoot, that means boats are needed to move around. Filming in Venice, you can get about 1/3rd of the shots you might plan for on a "normal" shoot day in a city with a mini van. Boats can also mess with people's stomachs, as the motion on the water can be a factor. Then there is shooting in Italy, which presents another set of logistical challenges.

This production was a welcome challenge because it was at short notice and also during one of the busiest times of year, Venice's winter *Carnevale*. There are a tremendous number of people and events. The days are shorter so needed to be even more organized when it came to getting those magic hour shots that show the city in its very best light. The best way to describe it logistically is by offering a comparison. You have to shoot in Times Square on New Year's Eve and the city is flooded and you have to get everywhere by boat. That was the situation we went into. Fortunately, we found some talented local people with a lot of experience and this was an enormous help.

Aesthetics

I'm super excited about large format sensors in cameras right now and I am very happy we are moving in this direction. I like to look at these things in terms of language. The Super35 format has its own language. The image has a well determined aesthetic and it is one that we have been raised on for motion pictures and television for more than a century. The crop factor is something we know.

Cinematographers inherently understand that the new larger formats are a new language, a new way to tell a story. It is opening up a field of view that, when combined with these higher resolutions, absolutely change the narrative and open creative expression. In this larger format digital age, we are beginning to understand why so many iconic films that were shot in large format have stuck with us. It's because there is just that much more to perceive and receive from the large format image.

I like the fact that the larger formats are moving us in new directions. We can go toward deep focus or shallow focus. In recent years, the DSLR revolution moved us into a kind of wide-open shallow depth of field mode. The lens options in large format push us toward wanting to reveal the fullness of the quality of the lenses and the sensors and let other people see the experience a large format deep focus image creates.

That experience can be realistic, if the production requires it or somewhat surreal, if you want to play with the full capacity of the format because shallow DoF in larger format offers more than S35 in terms of total image feel and depth.

Seeing into the soul of things

If you look at medium or large format portrait photography, you can perceive a depth to the images. It's like the larger format sees more into the soul of things. The result is, even subconsciously, deepening our experience with the content. A lot of emphasis is placed on resolution, but I feel that the field of view and the entire optical path to and after grading needs to be considered—including the combination of sensor, glass, format, color bit-depth and color gamut mapping. The balance between all of these factors helps shape the overall experience.

Workflow of this production

For *Venice* we were in what I call rapid deployment mode. We wanted to capture beyond the surface and have viewers experience more than what you might in a brief trip in the city. For this reason it was important to keep the crew small and tight, but have all of the gear needed to create images for presentation from your phone to the IMAX sized screen. Keeping shots steady was a major priority.

Getting the right shots, at the right time of day, was important. We had to chase light, operate in a documentary way, but present a movie that is up to the standards and expectations of large format cinema. The other important note was weather, so most of our pre-production happened the night before. But, it was a flexible plan. Light and circumstances dictated where we needed to be and what was to be captured.

I actually love working in this way because a lot of magic can happen and you get into the rhythm of nature and the surroundings and go with it. Of course, you have to pile up all the information you can and make decisions as you go. Peter and the entire crew are filmmakers who understand this and are patient. There is also a tenacity we have to bring to these shoots with a desire and willingness to stick it out to get the shots that make it into the film.

VENICE the camera in Venice the city

A word about the light in Venice. The city of Venice presents a huge dynamic range dilemma. Specifically, there are narrow, dark canals with heavy top light. When filming in a narrow canal with wide angle lenses you will almost inevitably completely blow out the sky. It's one of the widest dynamic ranges imaginable. In a boat, in a canal, you are actually in an even darker spot, below street level. Normally, you have a choice to make: expose for the shadows and blow out the sky, or expose for the sky at the expense of detail and color in the canal. We wanted both.

Sony VENICE and our choices of lenses performed well. The High Dynamic Range of the camera held detail in the highlights with a soft roll-off and retained the texture of the brick or stone walls, the color of the water and the painted buildings in the less "lit" parts of the frame. This was the biggest test to me personally, because I have wanted to see a camera-lens combination perform well when pushed in these extremes. At the base exposure of 500 ISO we could really push the sensor pretty hard before clipping.

We went to Venice with new tools and plugged them into the way we work. The camera performed reliably in diverse conditions The 16-bit color depth allowed us to pull out detail that might seem lost. I think colorists are going to be pleased at what can be recovered when they start to peer at pixels and push the image.

For a high-end, large format camera, Sony implemented a simple, easy system with VENICE, from acquisition to post.

The internal ND system was a plus. It was essential to the speed of our production. Sometimes, we found ourselves out on choppy water at 0 degrees Celsius, with the camera balanced on a DJI gimbal. If Peter wanted to make a creative choice to change a shot from deep focus to a narrower depth of field on a second take. We could do that in two seconds. (Could that have bee done with mattebox filters? No.)

The optics of the internal ND filters are clean. You can point the camera at the sun and appreciate the natural flare from the lenses without worrying about artifacts from the filters or sensor. We dialed in the ND of the moment. If you shoot nature or magic hour, the internal ND filter system will be appreciated. Knowing that the NDs are matched (Clear-8 Stops of ND) to the colorimetry of the sensor is something any cinematographer can appreciate. This was helpful toward the way we worked on this shoot.

I also want to mention that VENICE had another advantage for our shooting situation. The camera turns on instantly and is ready to shoot. There's minimal boot-up time. This was critical for us during long days on the boat while we were discovering shots. We could turn the camera on and be ready to shoot in seconds.

David Battistella is an award winning director, writer, producer, editor and filmmaker who lives in Florence. davidbattistella.com

By Michel (Mick) Pacifici, First Camera Assistant, Focus Puller and DIT on "Venice."

Pulling focus wide open in Full Format is no shocker to me. I have had the good fortune of working with Alexa LF, Alexa 65 and RED MONSTRO 8K VV. It is a great luxury when shooting on wider focal lengths, as Peter Chang typically likes to do on his giant screen productions. I'm a fan of the shallower depth of field because you can immediately see if you are in or out of focus.

I pull focus with a combination of traditional view by eye and fly by monitor techniques. With a Full Format sensor, you may think you are holding focus the way you were with a Super35 camera, but you may not be.

A cool tool for exposure is embedded in the assignable buttons: you can show where the scene is clipping in the highlights by turning it red. Red clipping is the equivalent of the thickest area of negative. Clipped areas go white in digital.

Outfitting the camera

I packed everything into 4 cases—camera, lenses, accessories—everything. We had to travel light and be as mobile as possible. We had an IDX V-mount battery on board to power the camera. I used a Preston Wireless Focus System: MDR 3 and Hand Unit 3. RS 3-pin connectors for power to the power port on the Preston. A Teradek Bolt 2000 provided wireless video transmission. For the gimbal rig scenes, Camera Operator Pedro Guimaraes, SOC used a DJI Ronin 2. The Ronin 2 also powered the camera and accessories.

You do not have to worry about exposure too much with VENICE. We liked the 1 stop increments of the ND filter wheel. By the way, when you change the ISO setting, DaVinci Resolve detects that and you don't have to adjust it in post. The camera also has variable color temperature. In addition to standard 3200K and 5600K, you can set almost any color temperature you want. You can even do a tint shift from Magenta to Green, and it is also automatically applied in DaVinci Resolve. That streamlines the process.

Lenses

Personally, I always liked the look of Cooke. The Full Frame Plus S7/i follow those expectations. They are very smooth and have good flare handling.

The Leica Thalias flare a little less, perhaps because the front element is a little more recessed in the lens barrel. Less direct sunlight would hit the front element. Thalias were the sharpest of the lenses we tested, in a good way. Overall, they were pretty and character also came from their pleasing bokeh.

We shot without matteboxes because Peter embraces the flares. He calls them highlights. He wanted to take what sun would give us, getting hit by the sun. The Cookes flared the most, which Peter liked. The Cookes are bigger and heavier—so on the Ronin gimbal rig, lighter was better—the Thalias are less massive.

DIT, Data Wrangling and Post

In addition to pulling focus, I was also the DIT. We were very familiar with the workflow of the Sony F65. The VENICE camera uses the same established workflow—but it is now much faster. The workflow is fairly seamless. We recorded X-OCN ST using Sony's AXS-R7 recorder attached to the rear of VENICE. X-OCN is Sony's visually lossless RAW format for smaller files. (X-OCN produces file sizes much smaller than camera RAW, resulting in longer record times, faster file transfers and more economical postproduction — while retaining the quality of 16-bit linear encoding.)

I brought a MacBook Pro laptop to manage our data. I used Pomfort Silverstack to manage, copy, and play back data. A Sony AXSM 1 TB Memory Card could be offloaded in 40 minutes with the USB 3.0 Reader. (The new Thurnderbolt Card Reader would be even faster.) Data was copied at about 5–6 frame per second. I made 2 or

3 copies to external, spinning hard drives: a primary and a backup.

Dailies were transcoded from the original X-OCN camera files to ProRes 422 1080 files with DaVinci Resolve 14. (DaVinci Resolve and Sony RAW Viewer will play X-OCN files.) DaVinci Resolve is a great tool and maintains frame accurate timecode and metadata. As I menitioned earlier, the VENICE ISO exposure metadata is transferred automatically into DaVinci Resolve, which simplifies pulling shadow detail out of very dark areas.

All of these things that are automated in the transcoding process with DaVinci Resolve allow you do more things on set. Working as both DIT and Focus Puller, it freed me up to focus on focus. I really was not playing as a DIT very much during the day except to check exposure. All those other things carry over into DaVinci Resolve.

Summary

I liked the latitude, color rendition, exposure, color temperature adjsutments of Sony VENICE. It's reassuring to know that you can't format a Memory Card by accident.

The Sony VENICE menus are not intimidating. Sony took the good things from F55 and put them into VENICE: one-touch buttons, timecode, and audio. They refined the menus even more. Camera Assistants and operators don't have to even see the deep Sony menus. (Push the Menu button for 3 seconds to dive deeper).

From left: Peter Chang, Director, Producer, Cinematographer. Violet Angell, Producer. Pedro Guimaraes, SOC, Camera and Ronin Operator. Michel "Mick" Pacifici, First AC, Focus Puller & DIT.

Maher Maleh: Leica Thalias on VENICE in Berlin

by Maher Maleh, Cinematographer

Sony VENICE and Leica Thalias

Sony and CW Sonderoptic both approached me to do this test, which is fun because I know both of them very well. I'm always happy to try new toys. We found a date. The first half of the first day was spent at the rental house learning about the camera and checking how do you outfit it and attach the accessories? How many power outlets do you have? What are the menu settings and all those things? I must say, I wasn't a big Sony fan before because the cameras were always too complicated, too big, and I didn't like the look.

However, I was very impressed when I saw the VENICE camera at Camerimage last year. Once I had first hands on the camera, I was even more impressed how lightweight and how small it is. The menu is pretty smart. Also the display. They did a great job on everything. So we went out and I called in a lot of favors from friends to just see what we could do. I did not want to do a staged thing. I really wanted to see what the camera is capable of in normal circumstances, with high contrast and fast movements. I wanted to find out how lightweight and if it was easy to handle.

Sony VENICE camera

The first day we just went with the camera as a rock-and-roll unit through Berlin and we had a few locations where we wanted to shoot. We have subways passing by just to see if there's any rolling shutter effect (there isn't) because the VENICE has a new system for their shutter which is pretty amazing. It feels a little bit like you have a 90-degree shutter, but it's not a technical, harsh shutter effect. It's hard to describe. You have to see it. It's very crisp, very clear when the object is passing fast or when you pan quickly on a long lens, but it's not a jittery shutter thing. It's something else, which was impressive.

On the second day, we had a Russian Arm and we simulated conditions on a car commercial to play with high contrast back light. We had a black car and full back-lit sun in dark alleys and full brightly light areas. It handled the contrast and the movement very well. The Russian Arm crew said that setting up the VENICE was among the fastest they ever did because the camera is very well balanced.

Next, we lit some interior scenes in a sports studio with high contrast backlight and haze to see the camera's handling of contrast and dynamic range. Having 8 stops of internal ND was really helpful. The controls and menu on the operator's side let you change internal ND filters very fast in increments of 1 stop to ND2.4, which is so much faster than using external mattebox filters. While shooting, you can even change the internal ND filters quickly within the take, when the sun comes out or a cloud passes by.

Then we went onto a rooftop for a high contrast sunset scene. We saw the entire width of the city. There was a small snowstorm, which was impressive. When you see the film on a big screen, you see every single snowflake coming down.

Leica Thalia lenses

That was the camera side of the shoot. Now, let's talk about the lenses. I used a set of the Leica Thalias. They were impressive. I have a set of Leica Summicron-C cine lenses, which I love, and I have a set of Summilux-M for my M10 camera, but I never worked with the Thalias before. We had the 24, 30, 35, 45, 55, 70, 100, 120 and 180 mm.

I was a little bit scared, at first, about the T-stops. They are not all the same, ranging from T2.2, T2.6, T2.8 to T3.6 depending on the lens. But, I must say, it was never a problem. The big, sensitive sensor made it easy to compensate. I always like to shoot wide open to get a very shallow depth of field, which is even shallower in Full Format than S35 for the same field of view. We had scenes where the depth of field was very narrow. It's a look I love and something you can't get on S35 sensor cameras. They lent me three close-focus prototypes: 24, 55 and 120 mm. The widest, 24 mm, was a beautiful lens. There's no distortion. They have an amazing close focus.

There's one scene where I go really close to the eyes and the beard of a guy and it's not a macro attachment. That's the original, close-focus lens. It's just what they do. I told my focus puller to just go to minimum focus and I'll walk as close as I can until I get the focus, and suddenly I felt this bang and I hit the guy with the mattebox because we went so close. That was impressive. When you play with lights hitting the lens from the side, like a Pocket PAR, you get nice flares. But, even shooting straight into the sun and then tilting down, there's no haze, no milkiness. They are crisp and sharp but they have a very cinematic bokeh. It's not like a crisp, sharp, video-looking thing.

I must say, I really like the look. It's crisp—but right behind your plane of focus, they fall off very nicely with a great bokeh. I would say it's something like the Summicron-C but even more cinematic. I really want to get them again. They're very nice cine lenses: very sharp where the focus is but a nice fall off right behind, not technically crisp, more of a "shooting on film" feeling.

Getting back to the camera, I used to think it was a Sony problem because I didn't like their look. They reminded me of the old Betacam days: super sharp, very well engineered, but nothing you would use as a cinematographer to make a nice look. But, now Sony has really made a camera that looks cinematic. The sensor is amazing. The colors and textures are beautiful. And the Thalias were perfect partners. They did well together.

Stills with Leica SL, PL mount, Thalia lenses

I actually took all the still photos with a Leica SL camera. It's a Full Frame—Leica Format—camera. I had a PL mount adapter and I used Thalia lenses for every shot. The PL mount is impressive. I would have liked to film with the SL (because it shoots both stills and video) at the same time, but we had too tight a schedule. We shot everything as 500 ASA. We never went above 500 ASA, even for the night scenes. I lit with a small LED, like a light saber. That was it. I was exposing at T2.8 or even T3.2 and the camera was very good in the blacks. I look forward to Sony's software update this summer with a second native ISO of 2,500.

Getting started

I live in Berlin. I was born there, in the western part. When I was three years old, we moved to the center of Germany near Frankfurt, and this is where I grew up. I never finished school because at one point they kicked me out. I wasn't really a school person. Then, I started in an advertising agency as a trainee and then moved my way up until I was a producer. I produced films for the German railway and other corporate projects, but I couldn't handle the blah, blah, blah. You know, when you're young and you have to tell the client how great this and that was. I couldn't do it, but I always loved to shoot. Fortunately, it was a small agency so we were involved all aspects: discussing concepts with the client, shooting, editing and doing online post production. I was able to learn the whole process.

But I liked camera the most. So I quit my job and joined Pille, a camera rental house in Wiesbaden, and worked there for six months as a trainee. Then I became a loader for two years and a focus puller for eight years. I did a lot of jobs in the States. I worked with Darius Khondji and all the other guys. It was an interesting time. Then I worked as a camera operator. On one of my jobs, a long commercial, the DP wasn't available after 7 days because they changed the schedule. The director said, "Maher, you take over." I said, "No, no, no. I'm not a DP." And he said, "But you have to. There's no other way for us to complete the film." The gaffer said, "Oh, come on, I'll help you."

It was so cool, so much fun, that I decided not to pull focus anymore and that was it. I never went to film school. I never shot any student films. I just went straight into the business. That was my kind of film school. I shot some commercials, music videos, an American TV series and two US features. Then I ended up doing commercials and I specialize in cars now. I almost never work in Germany. I fly around the world. Last year, I had 6 jobs in China 4 in Cape Town and many other cities around the world. Right now I'm Second Unit DP on "Homeland" in Budapest.

Full Frame

Not even the focus puller should be afraid of shooting Full Frame. It handles like an S35 sensor when you stop down a bit. No worries about exposure or handling: I used a waveform monitor on day one, but then exposed based on my monitor's look. And it was all there in the grading. That doesn't mean, "fix it in post and don't care while shooting". But it gives you another level of contrast handling and, because of that, new creative possibilities.

Even on a wide lens, you can get shallow focus on your image and put the attention on your actor without being distracted by a busy background, but you actually see more background. It feels more real in a way. In Super35, when you want to be close to your actor, the background is narrow, because you are using a medium to tight lens. Then it's a composed image. But if you have the same size shot of your actor and you feel more background because of the wide lens, it feels more natural and emotional, but still having full attention on you actor because of the narrow DoF. The Thalias are amazing: you can use wider lenses for close ups without distorting the actor's face. The look and close focus of the lens are unbelievable.

I would be happy to shoot everything on Full Frame. I have a Japanese car commercial coming up next month that I definitely want to shoot on Full Frame. Shooting from the Russian Arm, on a wider lens in narrow roads, seeing the full car without distortion and full attention on the car with an out-of-focus background is something I have always been searching for.

The Look of Full Frame

It's a new world for us cinematographers. It feels more natural on actors. Wide and tight, the camera is closer to the actor with a wider background being out of focus. For commercials, there's more attention on the product. This depth of field is a new world in cinema. You can like it or stop down if you want to feel the usual S35 depth of field. Full Frame has a more cinematic feeling all over—it's a big picture. You have to see it and try it yourself.

Thalias on VENICE, cont'd

Scorpio FFA Full Frame 2x Anamorphics

Servicevision Scorpio 2x FFA (Full Frame Anamorphic) lenses were introduced in September 2017. They are unique in having both full-height 24mm coverage and 2x squeeze. (Ultra Panavision 70 lenses have a 1.25x squeeze and the Hawk65 anamorphics are 1.3x.) *servicevision.es*

Scorpio 2x FFA

- 2x anamorphic squeeze
- Close focus. For example, the 35mm focuses to 1'6".
- Very small and lightweight
- Same maximum apertures of T2.2 and T2.8 as the Scorpio 2x Anamorphic S35 set. They are approximately the same size.
- There will be a whole set, with zooms as well.
- These are not "rear" anamorphics. The cylinders are distributed throughout the lens.
- Almost no distortion or breathing
- PL mount
- Same 95mm front diameter on all lenses
- Multiaspheric design

VENICE FF (Full Frame)
35.9 x 24 mm
6048 x 4032
(1.50:1)
43.3 mm Ø

FF Spherical Widescreen (2.39:1)
35.9 x 15.06 mm
6048 x 2534
39.02 mm Ø

Scorpio FFA 2x Anamorphic
28.68 x 24 mm 37.4 mm Ø
4818 x 4032 2x squeeze (1.195:1)

Scorpio 2x FFA Anamorphic Full Frame

20mm T2.8	75mm T2.2
25mm T2.2	100mm T2.2
30mm T2.2	135mm T2.2
35mm T2.2	150mm T2.8
40mm T2.2	200mm T2.8
50mm T2.2	250mm T2.8
60mm T2.8	300mm T2.8

I set these user framelines:

- Frame Line A > User Frame Line > On
- Frame Line > choose Color, Center Marker (cross hair), etc.
- User Frame Line > Height > 269 (this is the maximum picture height, which is 24 mm, 4032 pixels. The 269 number is an engineering figure, which hopefully will be replaced by actual resolution numbers in the future.)
- User Frame Line > Width > 384 (this corresponded to 4818 width)

Anamorphic Desqueeze Math Class

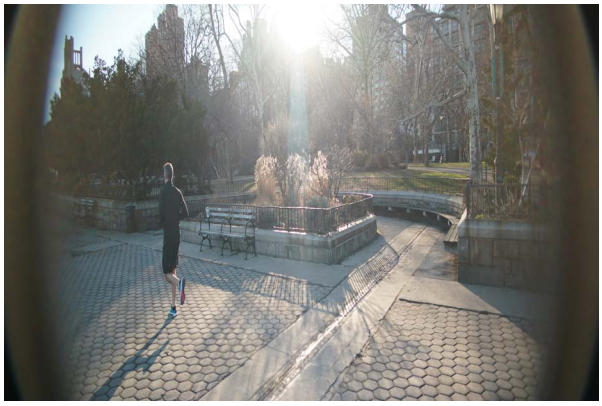
There are two ways to achieve 2.39:1 widescreen. Shoot spherical or anamorphic.

Spherical appears in the camera's viewfinder as a wide swath of picture with lots of unused top and bottom area (see diagram on opposite page). Anamorphic fills the frame and looks squished because anamorphic lenses use cylindrical optical elements to squeeze the image horizontally. The picture is desqueezed in post production or projection.

At the moment, Full Frame anamorphic comes in 2x, 1.3x and 1.25x squeeze ratios. I think we will see many more variations in the future. I also think we will become aspect ratio independent. As surely as Large Format is becoming the industry standard, cinematographers will want to fill those larger frames with squeezed anamorphic images.

An excellent way to rediscover Full Frame widescreen is with a Full Frame mirrorless still camera like a Leica M, Leica SL, Sony a7 series or α9 fitted with a PL mount adapter. The math is fun, so here goes. Let's begin by abandoning video and still photography aspect ratio numbers (16:9, 17:9, 5x7, 4x6). The math is much easier if we use traditional motion picture numbers, where aspect ratios end in a 1—as in 1.5:1 for Full Frame (not 3:2) and 1.33:1 (not 4:3) and so on.

The image below was photographed with a Scorpio 2x FFA 35mm Full Frame anamorphic lens on a Sony α9. The α9 sensor is 36 x 24 mm, which is an aspect ratio of 3:2...oops...1.5:1.



The image is squished 2x horizontally. Is it a problem that the Scorpio FFA vignettes on the left and right sides? No. That is unused picture area. The maximum area that we need has an aspect ratio of 1.195:1. How do we know it is 1.195:1? Because 1.195:1 is ½ of the final, deliverable aspect ratio of 2.39:1 after it is desqueezed 2x horizontally. (2.39 / 2 = 1.195.)

Since these framelines don't exist on still cameras, you can mark the live view monitor display with chart tape.

Next, let's desqueeze. Open the image in Photoshop. In the menu, go to IMAGE > IMAGE SIZE. Simply multiply the WIDTH by 2. (Be sure RESAMPLE is checked. Use "Pixels" as units of measurement.) For example, if the Sony α9 image was 6,000 x 4,000 pixels, enter the new width of 12,000. Leave the height alone. Eureka. You have desqueezed 2x.

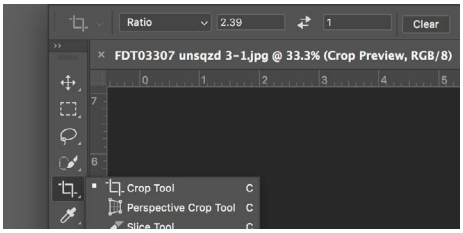
But, the picture is vignetting.

Yikes, and it also has a 3:1 aspect ratio.

How do we know this? Because Full Frame is 1.5:1 and 1.5 x 2 = 3.

Also, the Photoshop image resolution shows 12,000 x 4,000

Time to crop. Select the Photoshop CROP tool. Next to RATIO, enter 2.39 and 1. That's it. You now have a desqueezed 2.39:1 image. Photoshop does what cylindrical anamorphic projection lenses once did.



Anamorphic and Spherical Widescreen Field Trip

Now that we've graduated from Anamorphic Still Photography Math Class 101, let's enroll in Advanced Anamorphic Cinema Math. But first a field trip back in time for some anamorphic and widescreen history.

Marc Shipman-Mueller, ARRI Product Manager of Camera Systems, is our tour guide. He wrote, "Up until 1952, cinema formats were easy to understand because almost all mainstream movies and television were shot and projected in a 4:3 (1.33:1) aspect ratio of. When anamorphic productions surfaced after 1952, a number of aspect ratios were tried, including 2.66:1 and 2.55:1. (The need for further cost-reduction subsequently spawned the spherical widescreen formats of 1.85:1 and 1.66:1).

"An SMPTE specification for anamorphic projection from 1957 (PH22.106-1957) finally standardized the aperture to 2.35:1. An update in 1970 (PH22.106-1971) changed the aspect ratio to 2.39:1 in order to make splices less noticeable. This aspect ratio of 2.39:1 was confirmed by the most recent revision in August 1993 (SMPTE 195-1993).

"Unfortunately, most people were so used to referring to anamorphic films as 2.35:1, that many still used that aspect ratio even when talking about films shot after 1970. Similarly, 2.40:1 is incorrect, an unfortunate and unnecessary rounding up; a proper rounding up would be 2.4:1. The correct aspect ratio for anamorphic films shot after 1970 is 2.39:1."

And then there's spherical 2.39:1—shot with regular spherical lenses, not anamorphic.

Glenn Kennel, President of ARRI Inc, who worked on many committees in the transition from film to digital, added, "The DCI spec for the DCP (digital cinema package) used for distribution and projection is the aspect ratio (as defined in the original film specs) of 2.39:1.

"'Scope' is shorthand for 'CinemaScope,' but in DCI documents may be used loosely to refer to the widescreen 2:39:1 format, which is distributed as "flat" or "1:1 pixels", whether it is captured with an anamorphic lens or just cropped from a spherical lens."

OK. Enough history. Let the games begin. Shoot. Edit. Desqueeze with DaVinci Resolve.

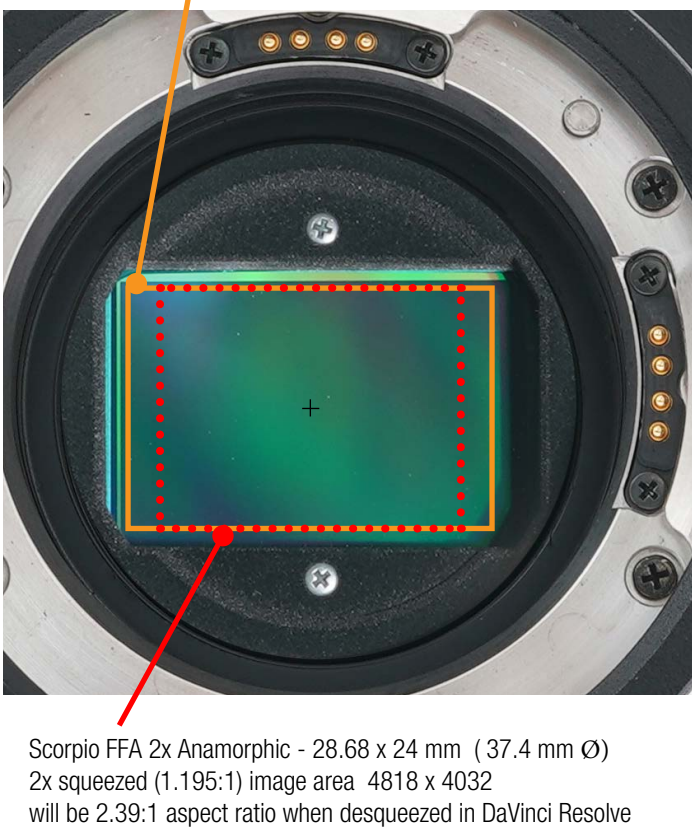
By the way, the examples that follow were shot with a Sony VENICE camera. The theory should also apply to other Large Format cameras: ARRI ALEXA LF, RED MONSTRO 8K VV, Panavision DXL, Canon C700 FF, with slight differences in the math because of different sensor sizes.

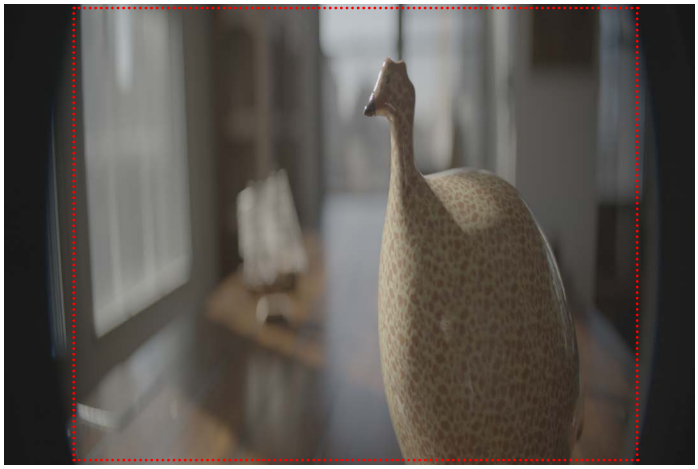
Anamorphic 2x Cinema Math Class

1. Scorpio FFA 2x 35mm Anamorphic lens on Sony VENICE.

VENICE Imager Mode: 6K 3:2 (1.5:1) 6048 x 4032 Full Frame, covering the entire sensor area of 35.9 x 24 mm. 23.98 fps. Recording X-OCN ST to AXSM card in AXS-R7 onboard recorder.

2. Here's the sensor. An Anamorphic 2x desqueezed 2.39:1 image begins life as a 1.195:1 aspect ratio on the image sensor. So, it is full height, but not as wide as the Full Frame sensor:



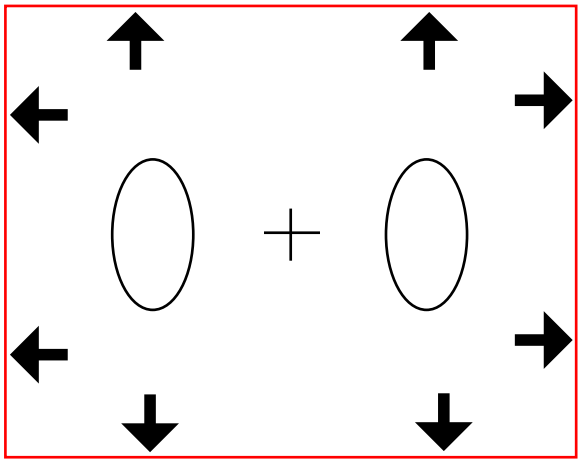


3. *(Above)* This is a framegrab of the Sony VENICE Full Frame 6048 x 4032 squeezed image. As with our Sony α9 still photography test, the sensor size is the same and so is the vignetting on left and right.

4. *(Above, right)* So, as with the Sony α9 test, we only need the active 1.195:1 area within the entire 1.5:1 Full Frame for our 2.39:1 final desqueezed picture.

4. *(At right)* Because 2x Full Frame Anamorphic framelines don't yet seem exist, be sure to shoot a framing chart for your friendly DaVinci Resolve post production crew. Shoot the chart at right. When desqueezed, the ovals will be circles.

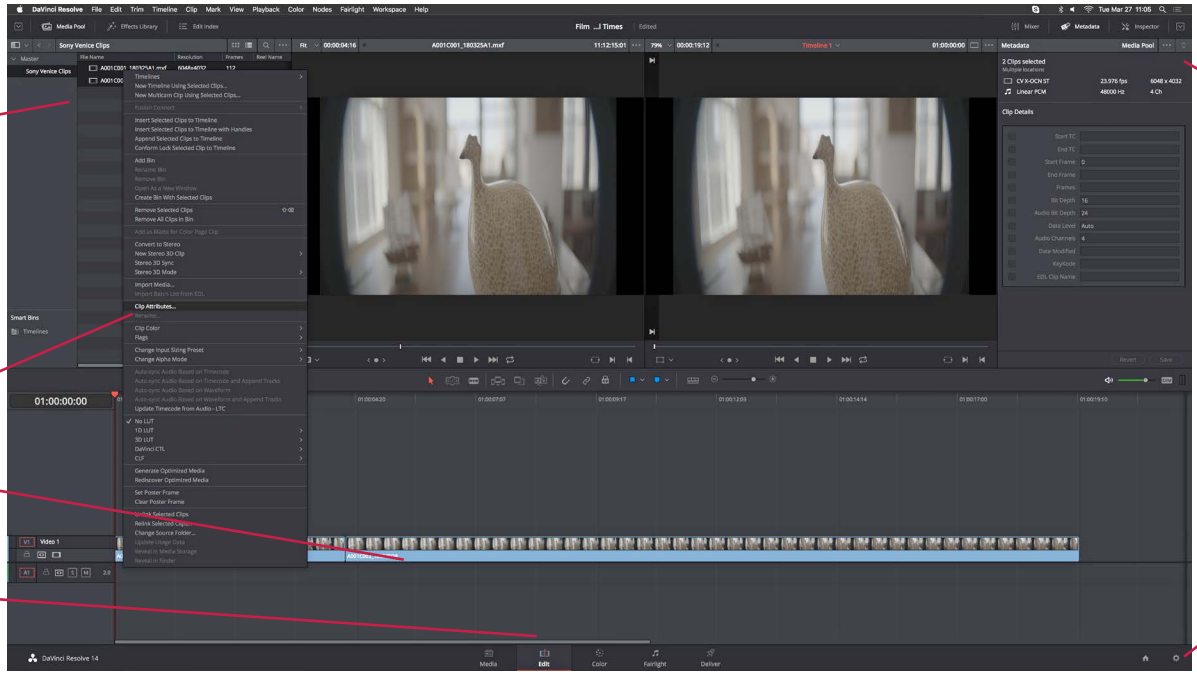
It's also a good idea to shoot framing charts as often as possible, because as the expression goes, "The projectionist has final cut."



5. *(Above)* This is what the 2x desqueezed image will look like in DaVinci Resolve. It's Full Frame 1.5:1 x 2 = 3:1. But we want 2.39:1 instead.

6. *(Right)* In the lesson that follows, Blackmagic Design's Jason Druss will take us on a tour with DaVinci Resolve to desqueeze and crop 2x Full Frame anamorphic cinematography. Thanks Jason Druss.

Desqueezing with DaVinci Resolve, cont'd



A great thing about DaVinci Resolve is that there are often several different ways to accomplish a task. The following steps are the ones we took. Your style of driving and mileage may vary.

8. Sony VENICE X-OCN ST files are visually lossless and RAW. We copy these files from AXSM Memory Card onto hard drive with a Sony AXS-CR1 USB 3.0 Card Reader, and launch DaVinci Resolve.

9. Go to *blackmagicdesign.com/products/davinciresolve/* to download the free version and the Studio version, or if you are already a customer, go to *blackmagicdesign.com/support/family/davinci-resolve-and-fusion* for the latest software updates..

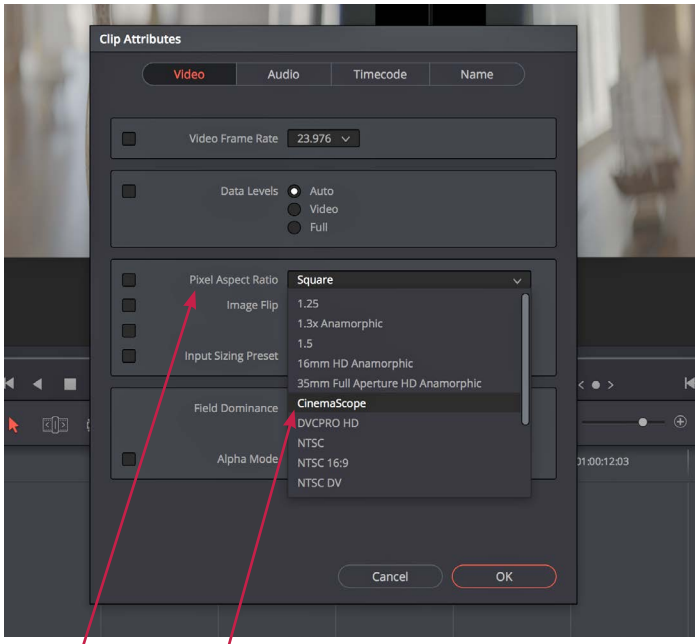
10. Go to DaVinci Resolve's MEDIA page. Drag the X-OCN file folders into the Media Storage Browser. Then drag the desired clips down to the Media Pool.

11. The clips have a 1.5:1 Full Frame aspect ratio. The image still looks squished. There's still vignetting on the left and right side. As Tom Hanks says in *Bridge of Spies*, "You don't seem alarmed." And Mark Rylance replies, "Would it help?"

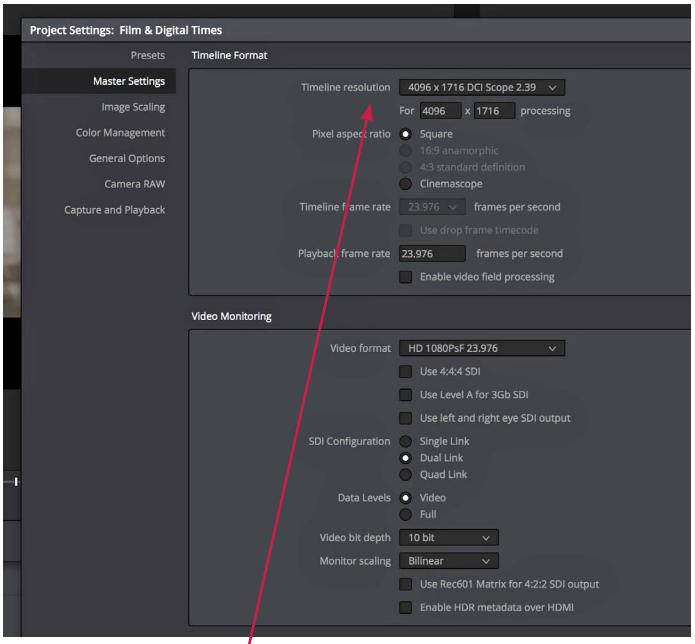
12. Here's help. Go to the EDIT page. Right click on a clip (or all clips by highlighting them all) in the Media Pool on the left side of the screen. Or right click on a clip within your timeline. Right click and select CLIP ATTRIBUTES from the drop down menu.

13. In the Pixel Aspect Ratio dropdown window *(below, left)* select CinemaScope and OK.

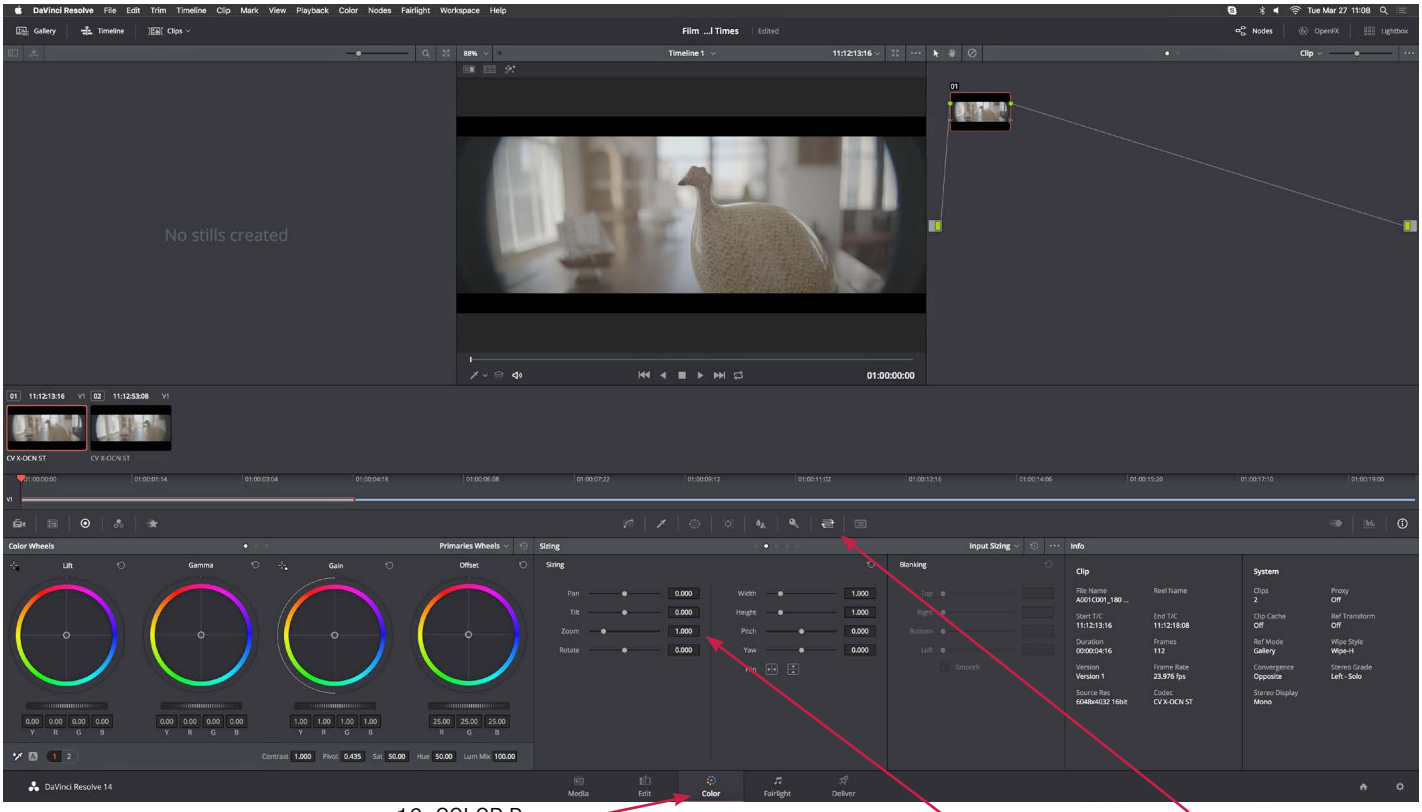
14. Change the timeline resolution to 4096 x 1716 DCI Scope 2.39 by accessing the drop down menu in your timeline resolution settings. They're accessed in project settings in the master settings tab *(below, right)*.



13. Pixel Aspect Ratio > Cinemascope



14. Project Settings > Timeline Resolution: 4096 x 1716 DCI Scope 2.39



15. The image delightfully desqueezes *(above)*. But the left and right sides are still vignetting because the aspect ratio is 3:1 and we see a letterbox top and bottom.

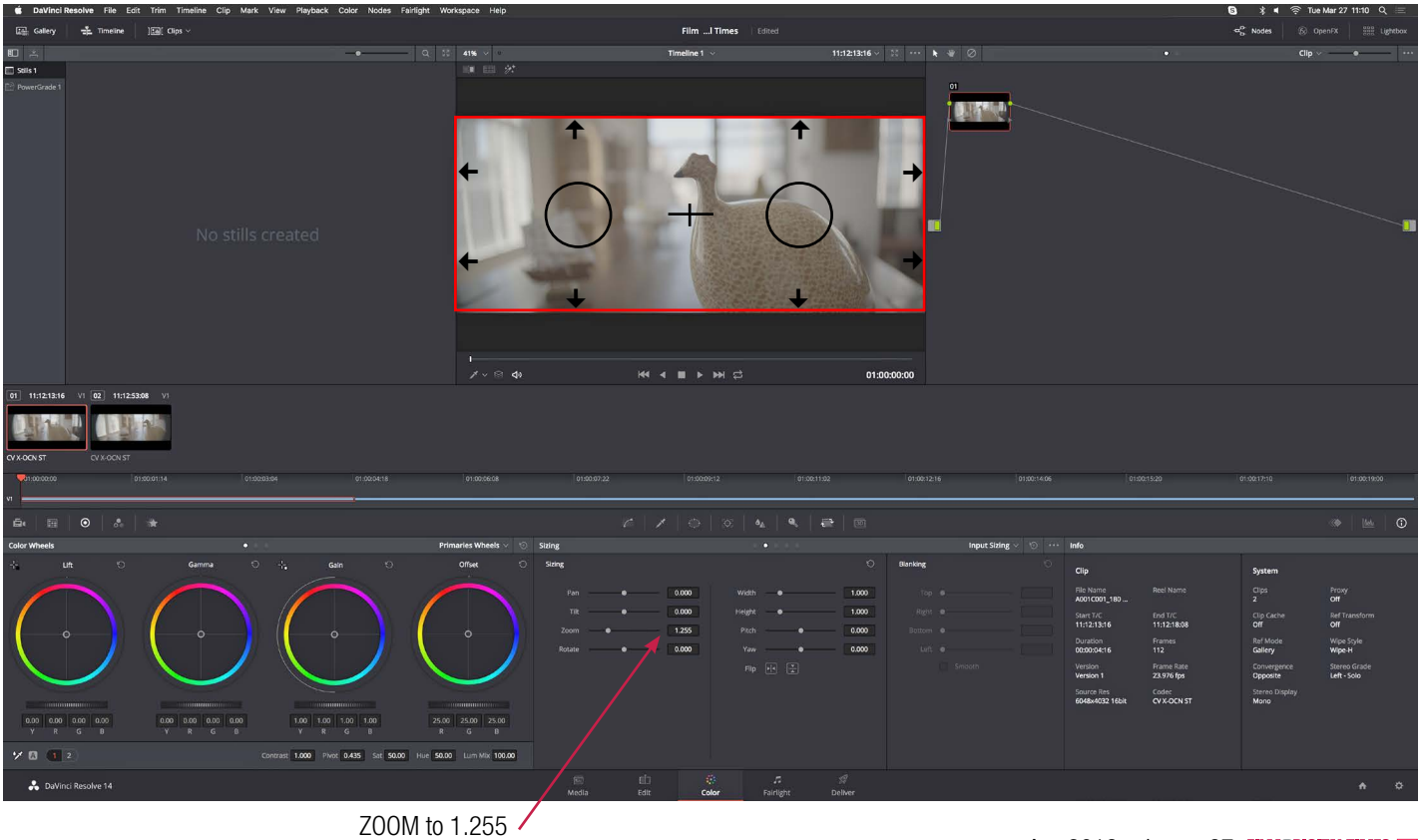
16. We are on the COLOR Page now.

17. If SIZING is not visible, click on the sizing tab immediately to the left of the 3D icon.

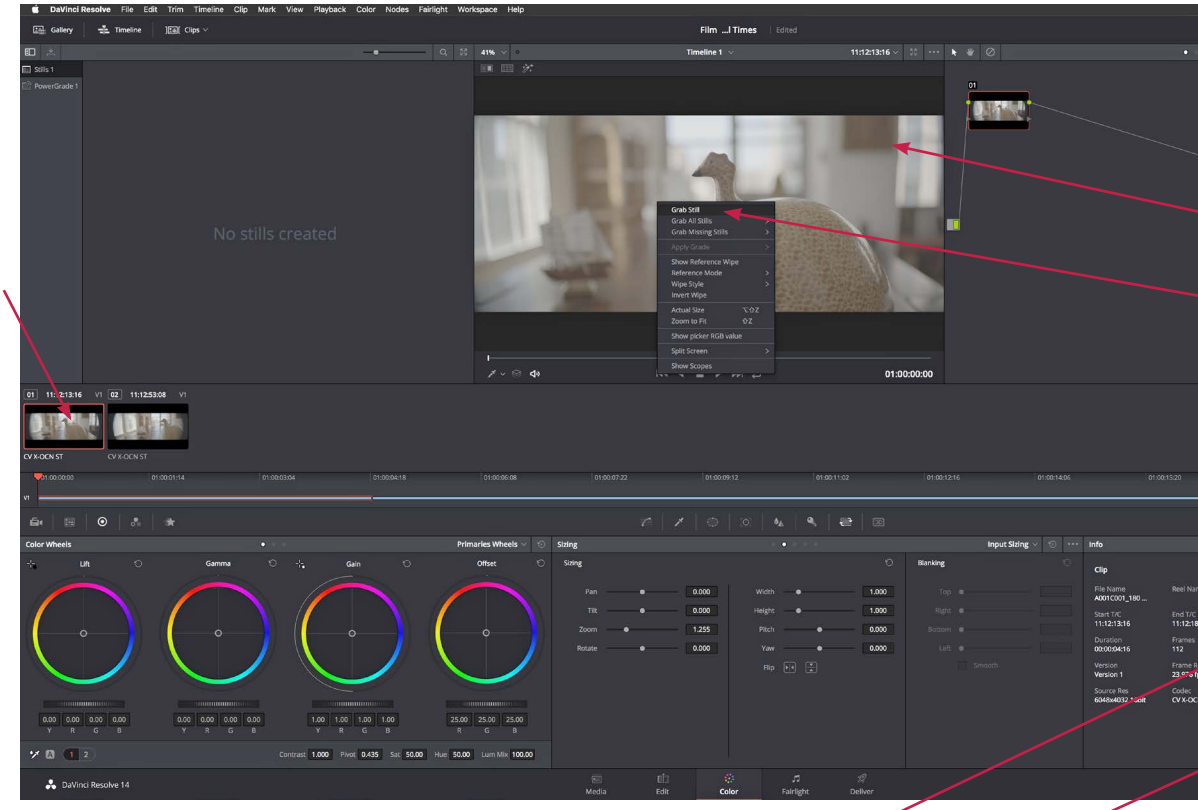
18. Adjust the ZOOM slider until the vignetting disappears. (Remember the framing chart you hopefully shot earlier. This is where it comes in very handy. Notice that the oval shapes are now circles, confirming the 2x desqueezing process is correct.)

19. We found the value of 1.255 worked well for the zoom setting.

20. *Below*: vignette is gone. 2.39:1 aspect ratio is correct.



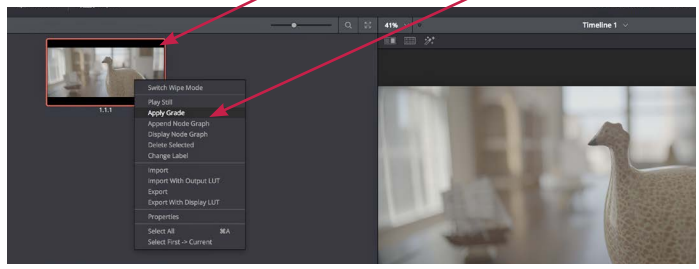
Desqueezing with DaVinci Resolve, cont'd

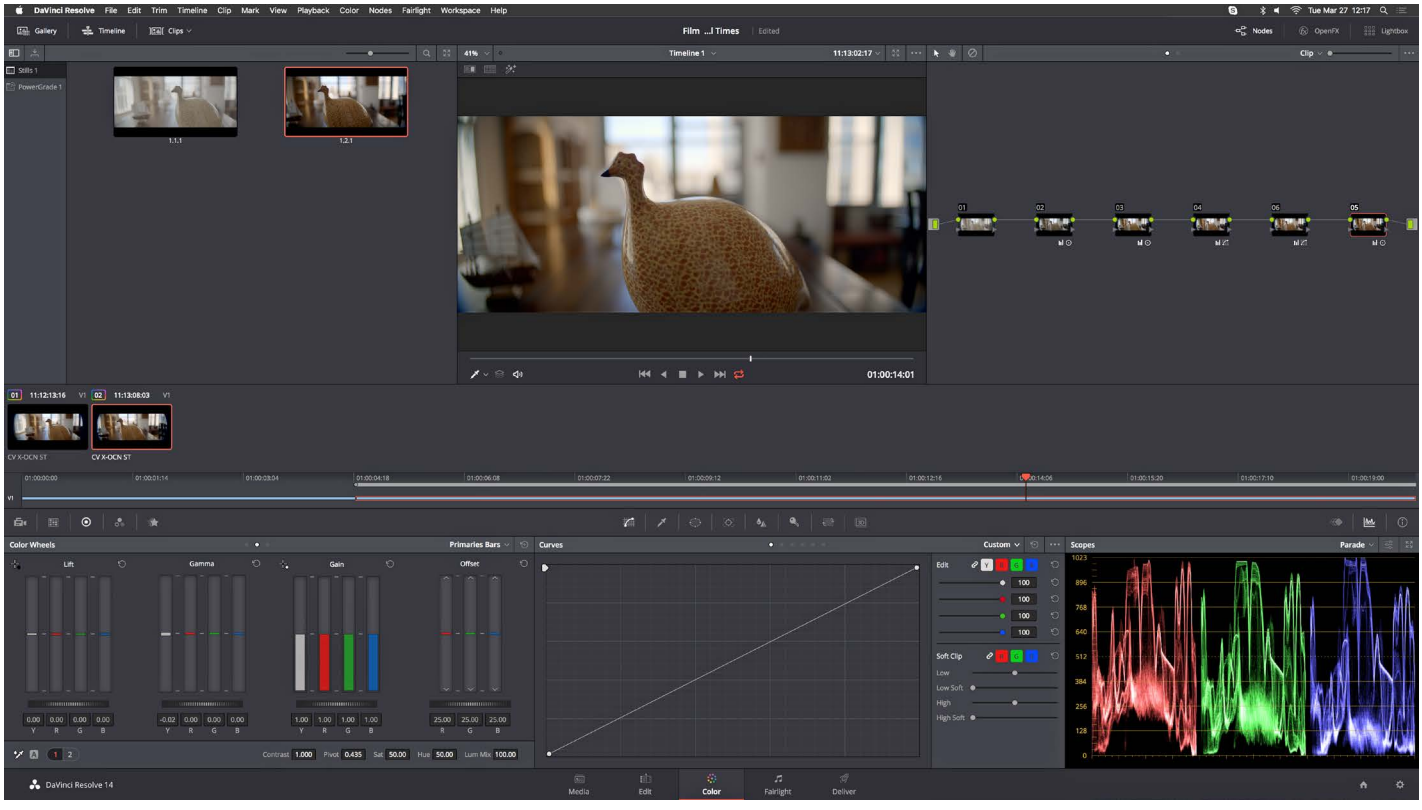


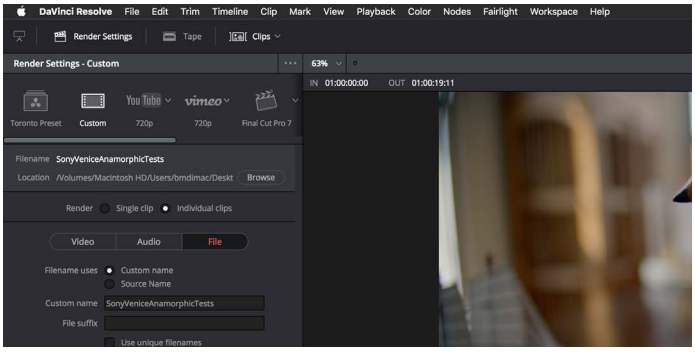
21. To automate the de-vignetting process with a node, right click on the viewer and GRAB STILL *(above)*.

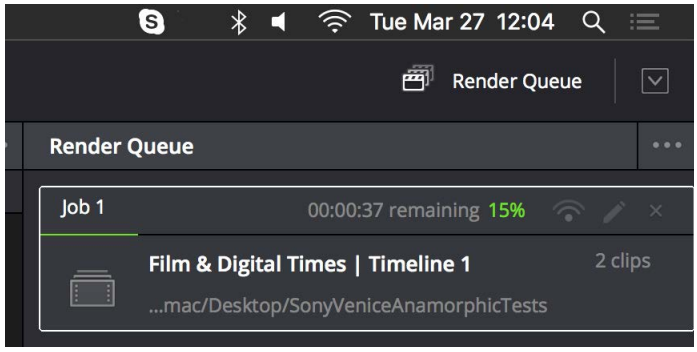
22. Select a clip (or all clips by highlighting them all). Right click on the still you just grabbed and select APPLY GRADE. The grade, in this case, refers to the input sizing adjustment, *(right)*.

23. Next, grade the image for look, *(below)*.

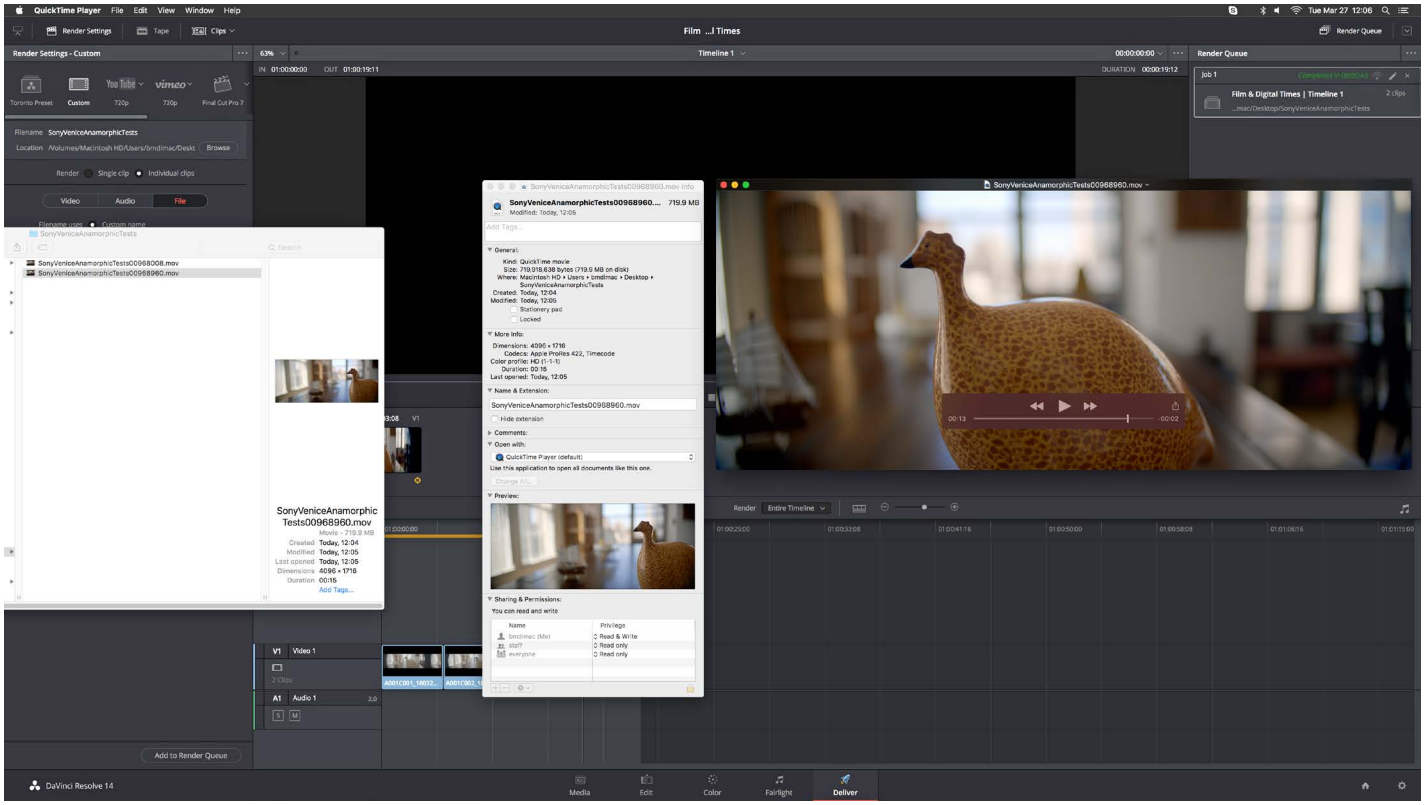




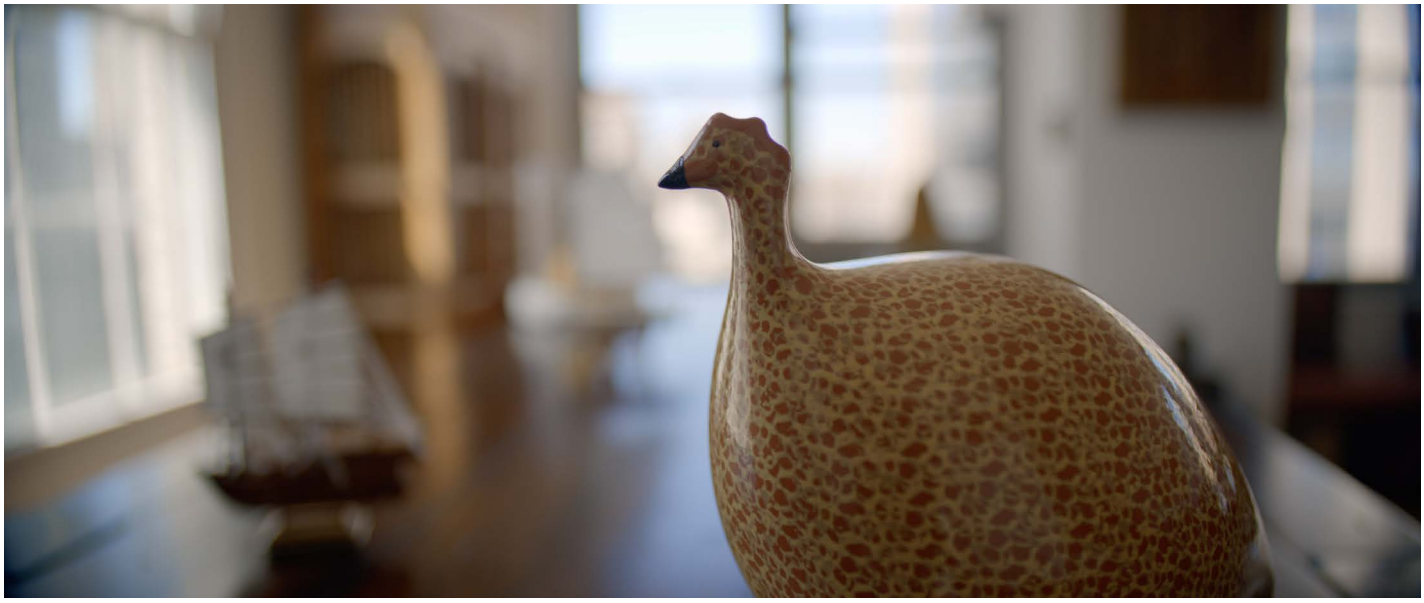




24. Go to the DELIVER page. Enter your render settings, destination and ADD TO RENDER QUEUE *(above left).*
25. START RENDER (*above right).*

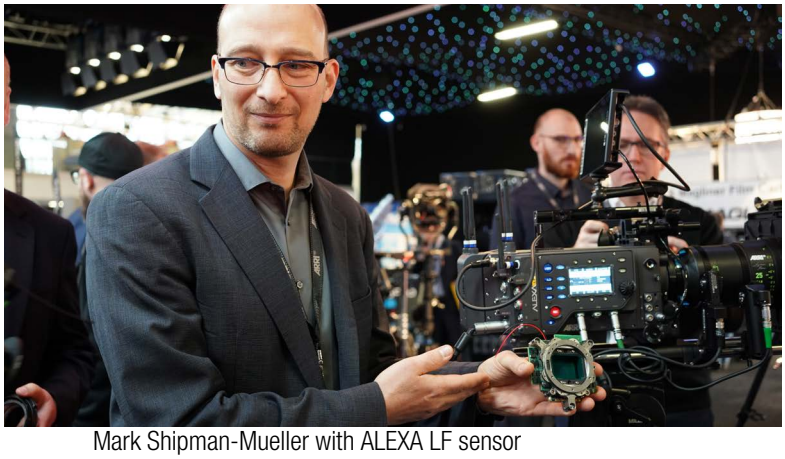


26. Our Apple ProRes 422 Quicktime shows a resolution of 4096 x 1716, which is 2.39:1 (*above). 27.* Success! *(below).*



ARRI Signature Prime Launch - BSC Expo - London, Feb 2, 2018

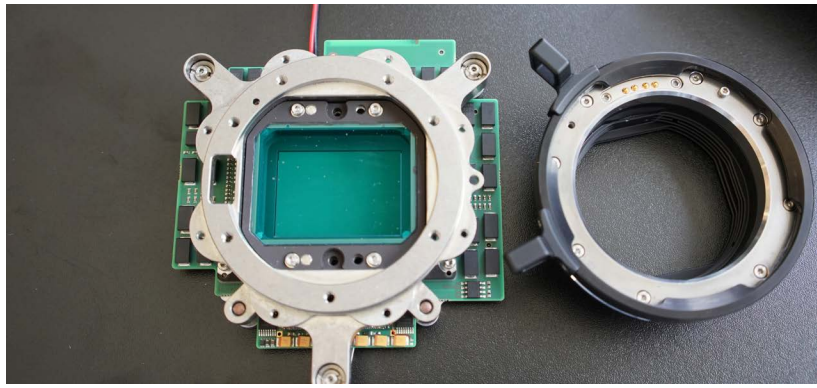
ARRI ALEXA LF Launch - BSC Expo - Feb 2, 2018



Mark Shipman-Mueller with ALEXA LF sensor

Thorsten Meywald with LPL Mount. Below: ALEXA LF sensor and LPL mount

Franz Kraus and Thorsten Meywald



What better way to test the new ARRI Large Format Signature Primes than tabletop cinematography in the company of fellow Film and Delicious Times foodies Thorsten Meywald and Howard Preston. Thorsten is ARRI Product Manager for Optical Systems and Howard is President of Preston Cinema Systems.

The test occurred under NDA the night before the ARRI ALEXA LF Camera System and Signature Prime lens launch at BSC Expo. The time: dinner. The place: an undisclosed location in London that was soon revealed to be the stellar Alain Ducasse at the Dorchester. Carried discreetly in a tote bag, Thorsten brought a rapid-prototyped LPL-to-E-mount adapter and 47mm T1.8 ARRI Signature Prime. A Sony α9 E-mount camera was concealed inside my jacket. I was expecting to be summarily evicted.

Mercifully, the Ducasse crew were amused. They helped with propping, food styling and lighting. Who could resist the call, "Please dim the lights, move camera right a touch, spectacular..."

The new ARRI Signature Prime 47mm T1.8 was working "wide open with a wrench" at T1.8. Depth of field was shallower than one champagne bubble. Skin tones were smooth and silky. Bokehs were beautifully soft and elegant. Close focus to the nearest caviar egg was 18 inches from the image plane.

Of course, you don't have to live on the edge of focus. Stopping down for more depth of field is an easy elusion if nostalgia for Super35 sets in. But why do that, especially when a Preston LR 2 almost certainly assures a Hollywood ending for any Large Format production. The Large Format ARRI Signature Prime 47mm T1.8 has a pleasing magnification. The 47mm is considered a "normal" lens in Large Format but would be the equivalent of a 32mm in S35 for the same angle of view. That's why Large Format backgrounds appear closer to the subject—it's the magnification. All photos were shot with the Sony α9 set to 3200 ISO, 1/200 second, T1.8. The warm tone in these photos comes from the lighting.

Leica Thalia Large Leica Format at AFC Micro Salon

Above: Tommaso Vergallo, CW Sonderoptic Key Account Manager for France and Italy at AFC Micro Salon in Paris.
Below: Kevan Parker, CW Sonderoptic Regional Sales Manager for Europe. Photographed with Leica Thalia 100mm at T2.2 with Sony α9.

Cooke S7/i Full Frame Plus at AFC Micro Salon

Above: Les Zellan, Chairman of Cooke at the AFC Micro Salon, Paris. Below, Les Zellan and Samuel Renollet, Camera Rental Manager of RVZ Paris. Photographed with Cooke S7/i 135mm Full Frame Plus at T2.0 on Sony α9 with PL adapter.

Cooke Optics - New Panchro/i Classics and S7/i

Cooke Optics Panchro/i Classic

The Cooke Panchro/i Classic family gets 4 additional focal lengths: 21mm, 27mm, 65mm Macro and 135mm. Panchro/i Classics provide a vintage Cooke Look in a modern housing. The Panchro/i Classic 135mm will be shown at Cooke's booth C8635 during NAB 2018. The remaining focal lengths are expected later this year. New lenses are highlighted in yellow.

Cooke Panchro/i Classic	T-Stop Range	Min. Marked Object Distance (MOD)		Close Focus from Lens Front		Angular Rotation to MOD	Rotation of Iris Scale	Length: Lens Front to Mount	Maximum Front Diameter	Total Weight	Maximum Image Coverage
18 mm	T2.2–22	250	9"	111mm	4.6"	270°	90	87mm	110mm	1.6kg	30mm
21mm	T2.2 -T22	200mm	8"	80mm	3.3"	270°	90°	92mm	110mm	1.5kg	Super35
25 mm	T2.2–22	250	9"	106mm	4.2"	270°	90°	92mm	110mm	1.5kg	30mm
27mm	T2.2 -T22	250mm	9"	106mm	4.2"	270°	90°	92mm	110mm	1.5kg	Super35
32 mm	T2.2–22	325	12"	181mm	6.3"	270°	90°	92mm	110mm	1.2kg	30mm
40 mm	T2.2–22	450	16"	280mm	11"	270°	90°	118mm	110mm	1.4kg	30mm
50 mm	T2.2–22	550	20"	380mm	15"	270°	90°	118mm	110mm	1.5kg	30mm
65mm Macro	T2.4 - T22	325mm	13"	114mm	4.5"	270°	90°	197mm	110mm	2.8kg	Super35
75 mm	T2.2–22	800	30"	593mm	23.3"	270°	90°	155mm	110mm	1.8kg	30mm
100 mm	T2.6–22	950	36"	743mm	29.3"	270°	90°	155mm	110mm	1.8kg	30mm
135mm	T2.8 -T22	850mm	2'9"	657mm	2'1.5"	270°	90°	167mm	110 mm	2.1 kg	Alexa 65
152mm	T3.0-T22	1100mm	3'6"	903mm	2'10"	270°	90°	167mm	110 mm	2.1kg	Alexa 65

Cooke Optics S7/i

The Cooke S7/i Full Frame Plus lens series continues to grow, with the addition of a 16mm, 21mm, 27mm and 65mm.

The S7/i Full Frame Plus Primes have an image circle diameter of 46.31mm, covering RED MONSTRO 8K VV, Panavision DXL, Sony VENICE, ARRI ALEXA LF and Canon C700 FF. *cookeoptics.com*

Cooke S7/i Full Frame +	T-Stop Range	Min. Marked Object Distance (MOD)		Close Focus from Lens Front		Angular Rotation to MOD	Rotation of Iris Scale	Length: Lens Front to Mount	Maximum Front Diameter	Total Weight	Maximum Image Diagonal
16mm	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	46.31mm
18mm	T2 -T22	400mm	16 in	TBC	TBC	270°	90°	TBC	110 mm	TBC	46.31mm
21mm	T2 -T22	350mm	14 in	109mm	4 in	270°	90°	189mm	110mm	3.3 kg	46.31mm
25mm	T2 -T22	350mm	14 in	109mm	4 in	270°	90°	189mm	110mm	3.3 kg	46.31mm
27mm	T2 -T22	350mm	14 in	109mm	4 in	270°	90°	189mm	110mm	3.3 kg	46.31mm
32mm	T2 -T22	350mm	14 in	109mm	4 in	270°	90°	189mm	110 mm	3.4 kg	46.31mm
40mm	T2 -T22	450mm	18 in	209mm	8 in	270°	90°	189mm	110 mm	3.5 kg	46.31mm
50mm	T2 -T22	500mm	20 in	259mm	10 in	270°	90°	189mm	110 mm	3.4 kg	46.31mm
65mm	T2 -T22	475mm	19 in	234mm	9 in	270°	90°	189mm	110 mm	3.0 kg	46.31mm
75mm	T2 -T22	475mm	19 in	234mm	9 in	270°	90°	189mm	110 mm	3.0 kg	46.31mm
100mm	T2 -T22	700mm	30 in	459mm	18 in	270°	90°	189mm	110 mm	3.3 kg	46.31mm
135mm	T2 -T22	950mm	39 in	709mm	37 in	270°	90°	189mm	110 mm	3.7 kg	46.31mm

Graeme Nattress, RED Problem Solver

Graeme Nattress's title is "Problem Solver." For me, he is the "Pixel Chef," as we'll find out in this story. Like other RED job descriptions—Fire Chief, SWAT, and Big Spender—it's a lot deeper than that.

JON FAUER: Who is Graeme Nattress?

GRAEME NATTRESS: I grew up in the northeast of England. If you're heading north, just before you hit the Roman wall, in a small town called Durham. I'm told that when I was a baby, I crawled behind the family TV to see how it worked and pushed it over. This was in the days of big black and white tubes and fortunately no one was. I've always been interested in television and visual technology. I was an early adopter of home computing at the start of the '80s. Computer graphics and I go back a fair way.

Did you study electronics in school?

I studied a bit of electronics in High School. When I went off to university, I did pure mathematics. There were one or two classes in early computer graphics and animation. While I was at university, I made little movies and "TV" episodes, just for our own entertainment and learning. We had no money. Our idea of low-budget was, "Did we have enough money to buy tape for the video camera and put petrol in the car to get to the location and still have enough left for a pint in the pub on the way home?"

Let's fast forward to 2018. Why shoot 8K?

That relates directly to why shoot with any degree of resolution at all! It goes back to how optical systems and sensors work and how we can't escape the Nyquist-Shannon sampling theorem. Aliasing looks ugly. It destroys compression efficiency. Growing up, I remember seeing the news presenters on TV with their ties or suits dancing around on screen and it was horrible. I didn't know what caused it, but now I know—it's a classic example of spatial aliasing. The reason we need high resolution in a camera system is to avoid aliasing and have lots of image data to work with. It doesn't matter how you're going to display it or what resolution the display is.

I remember when RED started and I was skeptical at first about using a Bayer Pattern sensor. But I learned that as you increase the resolution, the Bayer Pattern becomes incredibly efficient and really looks good. It's remarkably effective, it works incredibly well, and is even better when you're dealing with an over-sampled image.

On the original RED One we shot 4K for 4K because that was the best we could achieve in the beginning. At the same time, you could down sample at 4K to 2K and it looked incredible. Then we asked, "What is better?" And we had 5K for 4K, then 6K for 4K and now we're at the point where we can shoot 8K pixel for pixel and it looks great. It's actually better than 4K for 4K. Also, 8K makes for an incredible 4K image when you've down-sampled it, and even more so when you go down to 2K.

My little story here is that I took an EPIC W with an 8K HELIUM sensor to my daughter's dojo where she was practicing jujitsu. I just wanted to shoot some test footage as I always end up doing. It's nice to go out every now again and shoot something real instead of test charts. You know that I'm not a professional camera person. I brought the wrong lens with me and its aperture was too slow and the light in the dojo was horrible. My choice was to run home and get some different gear and miss the class or just shoot anyway and see what came out. So I shot anyway, saw what came out and yes, it looked a little bit less than perfect at 8K. But as soon as I down-sampled it to 4K or 2K it came alive. The image worked incredibly well. And although there was a little bit of noise, the down-sampling process translated the noise into more of a textural grain and the image looked quite nice. That's an example of how over-sampling does have real image benefits.

When are we going to see 8K TVs at home and 8K projection in theaters?

I don't know about cinemas. 8K technology is already on sale in some Asian markets. I think the Tokyo Olympics in 2020 will provide the content for many people to actually watch in 8K and obviously content is going to come first. There's no point having the display unless the content is there. It will be here sooner than we think. It's inevitable. We said similar things when HD first appeared in the Standard Definition days. And it happened. It was inevitable.

And yet some people are still skeptical about 4K. How do you then discuss 8K?

Fortunately, there was a real shift in the industry at the turn of the century. Funny—growing up, we used to think of "the turn of the century" in history class as 1901. Now it means 2001. Computers became powerful and useful enough to integrate with video technology. At that point we weren't on the same video technology time and price structure. We were on a computer based scale. Look at what happened to prices, power, technology, flexibility, and ease of use. We have seen more growth in image quality, finesse, flexibility and speed of workflows in the past 17 years than have been seen in the entire history of television or motion pictures.

The computer side of things is getting quicker, cheaper, faster every day—faster than we can make cameras with more data rate or resolution. We're on the right side of the curve to benefit from that.

I would reckon when 8K is in full adoption, it will be proportionately cheaper than 4K was at full adoption and a lot cheaper than HD was when it came out.

I would say it's a perspective thing. It seems a lot and doubling resolution is a quadrupling of the data. But all the rest of the technology is getting so much better, so much faster. Furthermore, you can achieve so many benefits from an 8K camera.

Even if you think you are never, ever, going to distribute in 8K, and distribute in 2K, you get all of those benefits. You're basically taking that massive amount of information, and like a good chef, you're boiling it down into a super tasty sauce. It works incredibly well and you get so many visual benefits—cleaner image, real sharpness rather than edge-enhancement, better defined edges without stair-steps or aliasing.

To your chef's analogy of secret sauces or pouring data, how do you, as a designer, deal with these increased data rates and REDCODE?

The enabling technology that makes it all possible is REDCODE. Let me dive into that. Many people are scared of compression. In many ways they have good right to be. Remember when the first MPEG videos came out on video CD? All you saw were macro blocks everywhere. It was over compressed and looked dodgy. Then we got DVDs and compressed video looked better. Now, Blu-ray is compressed but, again, the compression has improved. The data rate was relaxed a bit and they moved it up to high-def.

So, compression can be scary but that doesn't mean all compression is bad. Good compression is an enabling tool. It makes the whole system work. It's important to do sensible compression, the right amount and of the right kind which is going to survive through post-production.

REDCODE does all of those things. If you over compress the image, (because there's a range of compression allowed), the worst that can happen is you tend to get a little bit of softness that doesn't look bad. It certainly doesn't break up into a whole raft of macro blocks and look ugly. What does it enable? It lets you, as a single user, to have 8K recording on a camera that is lightweight and compact. You can go out and shoot in 8K and have a pretty long record time onto a MINI MAG. Those benefits also apply if you're on a big movie production as well. You have a compact camera that can get it into small places. The data rates are manageable. They're not straining the limits of what we can do on computer-based systems.

At the same time you're getting all of the benefits of 8K resolution because the compression is sensibly tuned to be visually lossless. You don't notice what the compression is doing to the image, only the benefits on data rate. Mathematically, you could compare the uncompressed data with the image reconstructed after REDCODE and you might notice that a pixel's numerical brightness value had a slight difference. But it's not something you would ever notice visually and that makes it so useful for what we're doing. We should focus on the end visual result and how we achieve it—not on the minutiae of the precise nature of the mathematics.

Where does this compression take place?

REDCODE compression happens after the A-to-D (Analog-to-Digital) conversion. There are custom chips inside the camera to do it. The sensor captures the light in an analog fashion. Next, the A-to-D converters turn it into a digital signal. There's some pre-processing to make sure that that the signal is normalized and lined up correctly. Then it undergoes the compression of the RAW Bayer Pattern as is. You're not demosaicing it first. That gives good gains on compression efficiency. It also means we have to design the compression so that it doesn't mess up the spatial relationships of those pixels in the Bayer Pattern.

When you're trying to demosaic or debayer the image, any sensible algorithm looks at the spatial relationships of a local group of pixels to accurately infer the interpolation and get a really nice, high resolution, detailed image. So it's very important that the compression be designed respectfully with the entire chain of image processing in mind.

The other way to look at compression is to turn it around and think of expansion. Let's say you have an 8K frame from a RED MONSTRO or HELIUM sensor and you're using REDCODE 10:1 compression. The data rate is quite manageable. When you decompress that image, you've got 8K resolution, 16-bit depth. Now, compare that compressed data rate to an uncompressed file of the same file size—it will be lower resolution and bit depth. I think it's quite dramatic in the benefits it brings.

You were the inventor of REDCODE. Can we have a brief history from "the turn of the century?"

It started with a phone call between Frederic Lumiere and Jim Jannard. I was writing software for Frederick and his company Lumiere HD at the time. At some point Frederic recommended me. It was through experimenting with Bayer Patterns and how they work that resulted in REDCODE.

Describe the difference between REDCODE RAW and ProRes.

They're conceptually very different. REDCODE RAW compresses the RAW data from the sensor. There's no image processing done to that data. It's in its raw state. It's still in its Bayer Pattern. It hasn't been demosaiced, hasn't been color processed, hasn't been put into a color space, hasn't had a tonal curve applied, nothing of that has gone on.

Whereas ProRes recorded in camera is the other side of things. You're taking a fully developed image that looks really good and you're treating it as an image as opposed to raw data. You're compressing it with a well-designed video codec.

REDCODE is designed for maximum compression quality. As a consequence, it takes a little bit longer to decode than a codec like ProRes which has twin goals. Its twin goals were compression quality, which is very good, and it was also designed for decompression speed on your personal computer. That relates back to their primary use and where they come from. One is a post-production tool.

The other one, that we introduced, compressed RAW camera data at a time in the industry where compression was absolutely despised and the only word you ever heard people wanting was uncompressed, uncompressed, uncompressed. We had to convince people that compression was actually good and helpful because it enabled a bigger, higher resolution picture for the same data rate. So we had to focus on absolute compression quality rather than doing the twin tasks.

Take us through the color science behind the latest MONSTRO 8K sensor.

The sensor and the sensor engineering is done by a team at RED. It's very much an art as well as a science. It's not just doing a perfect design on paper. It's how it actually is going to be physically and practically made and how is it going to look?

Where I come in is dealing with the actual data coming off that sensor that makes an image. I will look at the demosaic algorithm, color imagery and calibration. I'll do analysis of the sensor to determine sensitivity and to match it with all our other cameras. That impacts how the dynamic range is handled. I'll look at the texture and the noise and see what we want to call the dynamic range of the sensor. Once that's done, I'll look at color imagery calibrations to know precisely how the camera sees real world color of known values and how we translate that back mathematically to the actual colors in CIE XYZ.

Once we have the sensor calibrated in terms of brightness and color imagery, it slots into the image processing pipeline ,and I know you were going to put a ban on the word "pipeline," but it's hard to avoid I'm afraid. All of the RED cameras share common methods of calibration. When the pipeline is designed to do the image processing that makes pretty images come out the other end. Once you've got the calibrated images, the art is in providing an image that a customer wants.

How do you achieve this?

It has to be mathematically correct. And it also has to look good. One does not guarantee the other. You can make images that look really good but the mathematics is very dodgy. And you can do some absolutely good mathematics and get some dodgy looking images. When both of them meet together, that's where I like it.

Do you gather a group of DP friends and discuss which images you like?

It can involve that. Certainly there are lots of different transformations and algorithms that affect different aspects of the image that you are trying to bring out. When we are looking at an individual algorithm and I want some feedback on it, I am absolutely the worst person to do that. Just imagine I've spent the past umpteenth weeks, months, years, coding up some new thing to try and improve an aspect of the image. I am very inclined to like all that work because I've spent so much time doing it. There's a real bias. So, I do tests with DPs, colorists and reliable people who will provide good feedback. More often than not they will say they don't like what I've done. At that point I just have to start another cycle and take another tack at the problem.

One of the things that I think makes it so tricky is in any sort of algorithm development you can usually make things do what you want them to do. It's the cases where something is going to break where things especially matter. For instance, you'll get an algorithm that looks great on the skin tones, everything's looking fine but there's a clipped highlight on the edge of a light or an LED and it goes bonkers. You can't have that. It's got to fail gracefully under all circumstances.

Since you're the gentleman who designs these things, do you have some recommendations for a feature or commercial using a RED MONSTRO 8K VV camera?

There are a lot of different ways to do things and every time I go into a post house they're handling the footage slightly differently and have different nuances in the way that they like to work. I'm here to help them make things work for them. I'm not going to dictate to them how things should work.

The camera's the canvas, not the paint. They are the artists. That doesn't mean we can avoid making decisions that may impact the creative side. We like to step away and enable the actual creatives on the project to best define their aspirations. But not every user of a RED camera wants to do that. So there needs to be a set of tools and defaults to enable them to have a starting point look which is going to cover the needs of their project.

How do you discuss 8K resolution with a DP who talks about softer images, is worried about an actor of a certain age complaining about wrinkles in dailies? How do you reassure a producer who might thinks 8K is going to be too expensive?

Often doing things cheaply costs more—at least in the long run. There are two issues here. One is about resolution for the DP. Back in the days of standard def there wasn't enough resolution at all and you could rarely see any problems with skin or detail. The real problem came with the introduction of HD. It was meant to be sharp and detailed, but cameras coming from a TV background had the sharpness turned up. And we know about that: it doesn't just make edges appear sharper, it can do horrible things to textures and skin tones look like plastic. With good, high resolution digital cinema cameras, we have so much resolution that we don't need to turn up the detail. The resolution that you capture is natural, unenhanced and it looks real and unforced. You get a very natural representation of the scene you have carefully lit and captured.

To me, high resolution is very enabling for a cinematographer in terms of aesthetics. They should not be worried about high resolution as long as it's not forced. As long as you're not trying to get more out of a sensor than it can give you.

On the producer's side, capturing all that resolution and detail is enabling. Just look at what some of the really creative people out there are doing. David Fincher uses it for stabilization and visual effects to make some stunning images without compromise. If you try to do it the other way, if you tried to stabilize his cameras perfectly on set, imagine the time and technology that would take. I'm sure that would cost far more than capturing a bit more resolution on the camera.

Even if you capture in 8K just to down-sample, it's going to be easier to work with. The edges will be better defined. Visual effects will be better. Resolution adds those benefits.

You must be exhausted after my hour of grilling.

No, I get so excited and animated discussing these things. It's funny because so much of what I actually do is to look at the intricate details of code and mathematics and equations. But that's not really what I am doing. That's just the way I express myself. What I am really doing is what we've been talking about. It's another level.

We're thinking about images, not pixels. We're thinking about people's reactions and emotions and feelings, not code values.

BOLT on VENICE

FDTimes has learned that Teradek is working with Sony on an integrated Bolt wireless video transmitter that...er...bolts onto the back of VENICE cameras. Essentially, it's a Bolt 3000 designed to integrate seamlessly with VENICE. It mounts to the back of the camera, passes power and RAW data through its 1-inch thick housing and then connects to the AXS-R7 Recorder and/or onboard battery. "BOLT on VENICE" matches Sony's color, finish and style. The rounded corners and profiles of the camera are carried through in the onboard Bolt design. Status indicators and connectors are on top of the unit—clearing the sides from clutter and maintaining a clean aesthetic. *teradek.com*

Bolt Manager

Bolt Manager is a quick and painless device to help manage your entire fleet of Bolt wireless video transmitters (TX) and receivers (RX). It works without a computer. Perfect for rental houses, Bolt Manager lets you rapidly pair multiple receivers with the click of a button, change wireless channels, update firmware, and configure regional settings during prep or on set.

It's a little box running Linux, with 5 USB ports. Plug in 1 transmitter and 4 receivers and pair them via USB cables. In a rental house, where the service department is often scrambling to connect wireless devices, the Bolt Manager saves lots of time. No more clicking through menus, you can fly by wire to pair Bolts together.

Greg Smokler gave an example: "Let's say you're on a 2-camera TV series. Production calls for a third camera package for a big scene and it lands on gate of camera truck early one morning. Of course, the Bolts haven't been paired. All you have to do is plug and pair."

In summary, Bolt Manager is a device that:

- Quickly configures all Bolt models
- Works without computer
- Updates firmware and pair receivers
- Manages wireless channels across a multi-receiver set
- Ethernet connector and WiFi.
- Has a rugged case to go out on location
- Connects up to 4 receivers at once
- MSRP: $999

teradek.com

Teradek Bolt Updates

Bolt 3000 XT

Bolt 1000 LT

Teradek Bolt XT and LT

Teradek is refashioning the Bolt lineup of wireless video transmitters and receivers. Some models will be accessible at a lower price point while keeping complete compatibility with existing Bolts in the market: 500, 1000 and 3000. As before, the numbers refer roughly to range in feet.

The changes come from the culmination of customer, crew, rental house and end-users' requests for new features. The result is a combination of ideas from both companies in the Creative Solutions group. The best of Bolt and Paralinx designs have been unified. Moving forward, the brand will be Teradek. Paralinx ideas and esthetics will be absorbed into the Teradek products. The product line will be split into 2 fundamental segments: XT and LT.

Bolt XT is the premium wireless system for bigger budget, high-end cinema productions, with a range up to 3,000 feet. They have internally-wired battery pass-through and attach with brackets to monitors and cameras.

Bolt XT Receivers (RX) have dual SDI outputs and color grade LUTs can be applied. HDMI output and SDMI-to-SDI conversion is built in. The Bolt 1000 and 3000 have a new ergonomic design. They sit horizontally, which is a good fit with small monitors. An integrated NATO rail system enables quick mounting on stands and carts. The built-in spectrum analyzer facilitates channel selection for the least interference and best signal.

Bolt Transmitters (TX) are familiar, but now there's an added 3/8-16 mounting point with 4 registration ARRI-style pins for twist-free attachment to cameras. A small battery plate can be attached to the transmitter.

Bolt LT is the affordable line, with ranges of 500 and 1000 feet. The Bolt 500 SDI and 1000 SDI are easy to use, super compact, and smaller than an Anton/Bauer plate. The transmitters have a 3/8-16 mounting thread and a wide input voltage (6 - 28 VDC on the transmitter). There are external antennas on all models.

The entire line of Bolt XT, XT, Sidekick Teradek+SmallHD Wireless Monitors and earlier Paralinx models are fully compatible.

Teradek Bolt 10K

Teradek Bolt 10K ("10K" as in 10,000 feet line of sight) is an ultra long-range receiver, compatible with the Bolt 3000 system.

It is a fully integrated receiver built into a special case with a powerful antenna array.

The Bolt 10K receiver will be enthusiastically welcomed by drone operators and cinematographers chasing car rigs—and anyone else who needs a pristine zero-delay wireless video feed up to 10,000 ft. line of sight.

(Remember Stephen Oh's story of following the camera drone with a repeater drone on *Pirates of the Caribbean* to be able to view the scene over the long distances flown?)

The Bolt 10K receiver is about 12 inches square. It works alongside Bolt 3000, 703 Bolt, and Sidekick II receivers, has SDI and HDMI outputs, and LUTS can be applied to the output.

There's a choice of an attached Gold Mount or V-Mount battery plate.

bolt.teradek.com

Teradek RT Wireless Lens Systems

Teradek RT MK3.1 6-Axis Wireless Lens Controller

RT Motion has joined Creative Solutions and is now named Teradek RT. The product line of wireless lens control systems will be manufactured in the USA and sold by Teradek. The companies will work together to build the next generation of lens controls and wireless video.

RT Motion was founded in 2009 by filmmaker/cinematographer Kris Bird, Steadicam Operator Jamie Mullaney and Writer/Director Kerry Mullaney. RT Motion wireless lens control systems are known for high performance at affordable prices. A typical kit is comprised of a controller, up to 3 motors, and a receiver that attaches to the camera.

The Teradek RT line of products is compatible with ARRI, Panasonic, Blackmagic Design, Sony, and RED. The Latitude line of receivers integrate with RED DSMC and DSMC 2 cameras, allowing users to control EF Autofocus lenses, in addition to configuring shutter, start/stop, ISO, and button controls (2x magnification, edge, focus assist) via the wireless controller. FoolControl users can connect their iOS devices to a Latitude receiver's WiFi access point.

Teradek RT's MK 3.1 brushless motors operate quietly and have enough torque to "cut through" thick, coagulated grease in some vintage lenses.

The MK 3.1 4-Axis wireless controller (hand unit) has 4 user-mappable controls: knob, slider, wheel A and wheel B. The knobs, dials and sliders are smooth and have adjustable drag. The 2.4 GHz FHSS wireless transmitter has a long range. The 6-Axis controller is similar to the the 4-Axis unit, but adds a Forcezoom joystick to control zoom lenses.

Teradek RT accessories include Thumbwheels, a Zoom Rocker and the Smartknob, which is a standalone wired controller for Canon EF & Nikon AF lenses on DSMC / DSMC2 cameras. The controller has 6 user-mappable buttons, a fully customizable layout, and can be used as a primary or secondary unit.

teradek.com/collections/teradek-rt

Teradek RT Single Channel Controller

Teradek RT Single Channel Wireless Lens Controller

Teradek RT is now fully integrated across the product line of Creative Solutions. Two major new products arrive at NAB 2018: a low-cost single channel hand unit controller and a super speed motor. Presumably you'd use the single channel for wireless follow focus. But it could also be used to ride the iris, for example, on one of those exposure adventures with Steadicam going from a dark interior to a bright noon day sunlit exterior.

The new Teradek RT single channel hand unit has a 1.5km range. It can map and store lens data. It's super compact and is compatible with current and future systems.

There's a rosette on the top rear of the controller to attach a SmallHD monitor as a heads-up display. It can show lens information on screen and show depth of field .

Teradek RT Super Speed Motor

The Teradek RT Super Speed motor is as fast as any high-end motor with as much torque. It's brushless, silent and smooth. A button selects, and LEDs confirm, focus, iris or zoom status. The motors daisy chain together. Inserts convert 19mm to 15mm rod diameters and the gears have a quick-change knob.

Teradek RT with SmallHD FOCUS Bolt RX and FOCUS BOLT TX

The picture above explains it well. The MoVi Operator in the background is working with a FOCUS Bolt TX, a monitor/transmitter in one package—sending the video to the camera assistant (in the foreground) who is pulling focus with a FOCUS Bolt RX monitor/receiver.

FOCUS Bolt TX

The FOCUS Bolt TX is an 800 nit, bright, daylight-visible, 5-inch touchscreen monitor with a built-in Teradek Bolt 500 (500 ft range) wireless HD video transmitter. This combination of monitor and transmitter in one unit is a helpful device. It simultaneously does two jobs: providing an operator's monitor for viewing and transmitting zero latency HD wireless video to a focus puller, DP, director or anyone else in video village.

The FOCUS Bolt TX is compatible with the FOCUS Bolt RX (5-inch monitor/receiver), 703 Bolt (7-inch monitor/receiver), Teradek Bolt 500 and Sidekick II receivers. It has user-friendly touchscreen controls. Pairing the FOCUS Bolt transmitter and receiver is easy.

The FOCUS Bolt TX works as a fully featured, standalone monitor. It ships with a SmallHD Tilt Arm. The built-in OS3 operating system provides high resolution scopes, waveform, false color, focus peaking and real-time 3D LUTs. Additional tools can easily be customized.

FOCUS Bolt RX

The FOCUS Bolt RX is an ultra-light HD monitor/receiver with daylight visibility. It uses the same compact monitor as the FOCUS Bolt TX. The difference is that, instead of a transmitter, it has a built-in Teradek 500 receiver. The lightweight, bright, 800 nit display is powered by a single, center-mounted Sony L Series battery. This reduces bulk and weight.

FOCUS Bolt RX is compatible with the FOCUS Bolt TX (5-inch monitor/transmitter), Teradek Bolt 500 and Sidekick II transmitters. The 5-inch, daylight viewable monitor/receiver ships with a pair of lightweight handles for comfortable viewing and touchscreen navigation.

The FOCUS Bolt RX is equipped with the SmallHD OS3 software package. Focus pullers like focus assist and peaking. DPs enjoy the customizable exposure tools like false color and waveform, and everyone will appreciate the real-time 3D LUTs.

The Creative Solutions connected set continues to come closer.

teradek.com *smallhd.com*

Leica M 0.8 Lenses on Sony VENICE

There are five Leica M 0.8 lenses — in focal lengths from 21mm to 50mm. They have a Leica M mount (27.80 mm flange focal depth). Leica M lenses are among the lightest and smallest Full Frame lenses.

Lurking under the Sony VENICE PL mount is a native E-mount.

A Leica M to E-mount adapter opens the entire world of famous Leica still lenses—modern and vintage—that have captured decisive moments for generations.

Sony plans to update the VENICE firmware in the coming months to enable E-mount metadata. Meanwhile, there are mechanical workarounds and CW Sonderoptic is working on VENICE M mounts.

cw-sonderoptic.com
leica-camera.com

Focal Length	21mm	24mm	28mm	35mm	50mm Noctilux
Aperture	f/1.4	f/1.4	f/1.4	f/1.4	f/0.95
Image Circle	Full Frame (testing recommended)				
Weight (G)	515	505	480	370	835
Weight (Lb)	1.1	1.1	1.1	0.8	1.3
Length (Cm)	8.7	8.7	8.3	8.3	9.8
Length (In)	3.4	3.4	3.8	3.3	3.9
Close Focus (M)	0.7	0.7	0.7	0.7	1.0
Close Focus (Ft)	2'3"	2'3"	2'3"	2'3"	3'3"
Front Diameter	80mm				
Screw-In Filter	77mm				
Lens Mount	Leica M				

Sony VENICE with M0.8 50mm f/0.95 Noctilux

EVA2.0 Firmware Update for Panasonic EVA1

Panasonic AU-EVA1 Super 35mm cine cameras get a free, new firmware update. EVA2.0 (aka Version 2.00) adds RAW output, timelapse recording, ALL-Intra frame recording formats, HD 4:2:2 interlaced formats, and more. It's ready to download now: *pro-av.panasonic.net/en/eva1*

For anyone who missed all the excitement, Panasonic's EVA1 is an extremely successful EF-mount camera with a 5.7K S35 sensor. It has an impressive 14-stops of dynamic range, Dual Native 800 and 2500 ISO, and the same image "look" as the rest of the VariCam family. The EVA1 is small (6.7 x 5.3 x 5.2 in), light (2.6 lb body only) and affordable ($7,345). It is popular on gimbals, drones, Steadicam, handheld, docs and independent productions.

"When the EVA1 was announced last summer, we promised a major expansion in its functionality in early 2018," said Mitch Gross, Cinema Product Manager, Panasonic Media Entertainment Company. "EVA1 Version 2.0 fulfills that promise with features like RAW output and All-Intra recording as well as with such unannounced, user-requested features as a 2K at 240fps RAW output and additional interlaced HD recording formats."

"The big thing is RAW. We are enabling RAW output via 6G SDI to third party recorders. There are 3 levels of RAW output. It's 5.7K from 1-30 fps. It's 4K from 1-60 fps. And it's 2K from 1-240 fps.

"These are uncompressed, 10-bit, log-structured RAW files. 5.7K uses the full Super 35 frame (5760 x 3072 resolution, 24.6 x 12.97 mm sensor area).

"The 4K is a window, cropped to native 4K, 4096x2160 on the sensor, representing a 4/3 format 19.44 x 10.25 mm picture area similar to the Panasonic GH5 camera.

"For 2K we do something very interesting — taking 4K and turning it into 2K RAW while retaining the four-thirds imager size."

EVA2.0 also introduces ALL-Intraframe (ALL-I) 10-bit 4:2:2 recording up to 400Mbps. Intraframe recording requires less processing and allows you to do real-time editing on cost-effective, high-performance computers.

New ALL-I codecs and frame rates:

• 4K	400Mbps 10-bit 4:2:2	29.97p/25p/24p/23.98p
• UHD	400Mbps 10-bit 4:2:2	29.97p/25p/23.98p
• 2K/FHD	200Mpbs 10-bit 4:2:2	59.94p/50p
• 2K	100Mbps 10-bit 4:2:2	29.97p/25p/24p/23.98p
• FHD	100Mbps 10-bit 4:2:2	29.97p/25p/23.98p

New Variable frame rates:

• 4K/UHD	VFR up to 400Mbps 10-bit 4:2:2	1-30fps
• 2K/FHD	VFR up to 200Mbps 10-bit 4:2:2	1-120fps

EVA2.0 includes two additional interlaced codecs.

New interlaced codecs:
1920 x 1080, All-I, 10-bit 4:2:2, 59.94I/50I
1920 x 1080, LongGOP, 10-bit 4:2:2, 59.94I/50I

Remote operation is now available with 3rd party wired controllers for focus, iris and zoom control of the Canon Compact Cine Servo zoom lenses (18-80mm and 70 200mm). Wireless remote control of these lenses will be available through the EVA ROP (Remote Operation Panel) app for iPhone and iPad.

Timelapse (Interval recording) is also available for both LongGOP and ALL-I.

For viewing, EVA2.0 enables partial cloning of the LCD signal to HDMI and improved file playback in LongGOP and ALL-I.

There are also new Home screen controls.

business.panasonic.com/products-professionalvideo

ZEISS Full Format Cinema Zooms CZ.2

Christophe Casenave, Product Manager at Carl Zeiss AG, and I had discussions this February at Micro Salon in Paris and subsequently by phone.

JON FAUER: ZEISS Full Frame Cinema Zooms (and Full Frame Primes) arrived long before the latest wave of Full Frame cameras. How did you anticipate this?

CHRISTOPHE CASENAVE: We started the design of the Cinema Zoom (CZ.2) lenses around 2009. At that point in time, the cinema landscape was mostly film, and it was Super35 format—and almost everybody was happy with that. So why would someone ever start designing cinema lenses with larger coverage ?

In fact, nobody at ZEISS believed that film would last forever. And for the cine industry, switching to digital meant that there would no longer be the need to have one standardized format for shooting. Nevertheless, the first digital cinema cameras adopted sensor sizes that approximately matched the Super35 format.

At that time, we already believed that larger formats would come—simply because the production process of the sensor would, at some point, allow and enable it. If you removed the cost constraints of using larger imagers, then everybody would want to shoot on larger formats.

It was a tough decision to take: what larger format do we use to design our new cinema zooms, when nothing had been standardized and no camera manufacturer had dared to share any plans? So, we chose a format that people knew for ages. It had been the still photography format for the previous 100 years: Full Frame 36mm x 24mm. This format was already widely used in digital still cameras. We thought that this would probably be the next step for cinema, as Directors of Photography almost always were still photographers in their spare time. As hobby photographers, they were certainly used to Full Frame.

As you know, at ZEISS, we always need to develop things a little bit better than what we specify, so even if "designed" for Full Frame 36 mm x 24 mm, these zooms cover a bit more image area. In fact, they will cover the RED MONSTRO 8K VV sensor all the way to the corners (46.31 mm Ø). The only exception is our CZ.2 15 – 30. It covers the RED MONSTRO 8K VV from 16 mm onwards, which is only 1 mm less than the full range of this zoom lens. All the CZ.2 zooms will cover the ARRI ALEXA LF sensor in Open Gate mode (44.71 mm Ø) without problem.

Lens	Aperture	MOD [1]	Length [2]	Front Ø	Wgt
15-30mm	T 2.9 to T 22	0.55m 1'10"	252mm 9.92"	114mm 4.5"	2.6kg 5.7lb
28-80mm	T 2.9 to T 22	0.83 m 2'8"	196mm 7.72"	95mm 3.7"	2.5kg 5.5lb
70-200mm	T 2.9 to T 22	1.52 m 5'	250mm 9.84"	95mm 3.7"	2.8kg 6.2lb

[1] Close focus distance (MOD) is measured from the image plane
[2] Front to PL mount flange

Obviously you want to use these Full Frame lenses on cameras with large format sensors. What would their equivalent be if you were shooting in S35 format?

It is important to understand crop factor and equivalence of focal lengths. The latter is linked to the sensor size. In fact, what people are looking for is angle of view, not really focal length. So, when they shoot on Super35 they are used to a certain angle of view and focal length combination. They would like to "rediscover" these angles of view when shooting in Full Frame or larger formats.

To switch between Super35 and Full Frame, one needs to calculate the crop factor between both sensors. We can take the horizontal dimensions of the different sensors to calculate the crop factor, because the majority of people will refer to horizontal field of view (easier to remember than diagonal). For example, in the case of the new Sony VENICE, there is a 1.5x crop factor between its Large Format (36.1 mm) and a Sony F55 (24 mm wide, Super 35). Now, let's look at the CZ.2 zoom equivalents when shooting Full Frame or Super 35.

Therefore, in summary, when used in combination with a large

CZ.2 lenses used in Full Frame (36x24 mm)	Equivalent focal lengths for same field of view in Super35 (24x18 mm)
CZ.2 15 mm – 30 mm	9.8 mm – 19.6 mm
CZ.2 28 mm – 80 mm	18.3 mm – 52.3 mm
CZ.2 70 mm – 200 mm	45.7 mm – 130.7 mm


Christophe Casenave at his ZEISS office in Oberkochen

format sensor, the CZ.2 15–30 can be considered as an ultra-wide zoom, while the CZ.2 70–200 is then a short tele zoom.

Shooting in large format also has an effect on the depth of field (DoF). How does it work and what does it mean?

It is interesting how many people are currently bringing a lot of scientific explanations to the fact that T-stop equivalence also applies when changing sensor size. I will not give any mathematical formulas because it has already been done. I will rather try to explain it in a very intuitive way.

DoF depends on the aperture, the focusing distance and the focal length. Sensor size plays an initial secondary role.

1. When you increase your focal length, you will decrease your depth of field.

2. When you increase your aperture (decrease the T-stop), you will decrease your depth-of-field.

3. When you decrease your focusing distance, you will decrease your depth of field.

Now, remember the earlier statement: what people are looking for is not a certain focal length, they are looking to achieve the same field of view (angle of view). When shooting on a larger sensor, in order to keep the same angle of view while staying at the same focusing distance, you need to use a longer focal length. So your depth of field will decrease (with the same aperture).

So for the larger image sensor, which T-stop in large format gives the same depth-of-field as S35? As a general rule-of-thumb, you just need to multiply your smaller format's T-stop by the crop factor.

This means that if you are shooting at T2.0 on a Super35 camera, our CZ.2 zooms will have approximately the same depth-of-field in Full Frame at T2.9. (2.0 x 1.5 = 3.0), just over 1 stop difference.

Put the other way around, since our CZ.2 have a maximum aperture of T2.9, on a Sony VENICE that's the close to having a T2.0 on a Sony F55 S35 camera for the same field of view.

Consequently, you can also say: given a certain T-stop and angle-of-view, a larger image sensor enables you to create a more shallow depth-of-field look.

Please tell us about the optical design and performance of the CZ.2 zooms.

My colleagues from the optical design department can certainly describe the technical aspects of the designs better than I, so I will talk about the things the user will see.

These zooms have been designed from the ground up for cinema productions. This means that they offer some key characteristics that the majority of users will want to see: no zoom shift, no focus breathing and, of course, the same T-stop over the complete zoom range.

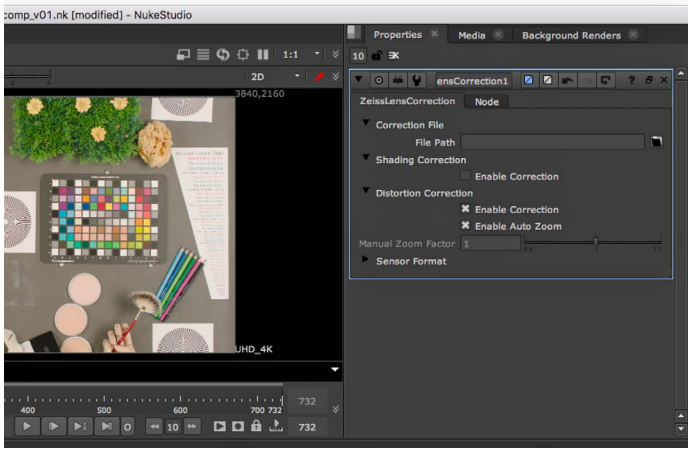
Their image look has been designed to match the most popular ARRI/ZEISS lens lines – Ultra Primes and Master Primes. Which means you will find sharpness and crispness in the images, very low distortion, as well as minimal chromatic aberration. Color tone is neutral, so grading is made easier. Nevertheless, while they are sharp and neutral, they will create a very organic look, especially due to the very nice and smooth fall-off from the focus plane to the out-of-focus area and the superb, perfectly rounded Bokeh. Very much emphasis and effort has been taken on making the lenses as compact and lightweight as possible while still covering large sensor sizes with very high performance.

Now, when using CZ.2 lenses on large format sensors—for which they have been designed—they will deliver their full artistic capabilities.

ARRI has launched the Alexa LF with LPL mount. Do you plan to do a version of these zooms with this mount ?

Definitely. As you know, these zooms have been designed for our interchangeable mount system (IMS). This means that it is very easy for us to add new mounts as an option. We are already working on the LPL mount and it will be made available as a set, so owners of the CZ.2 will have access to it. Like all other mounts on our lenses, it will be possible to switch between PL and LPL very easily without needing to send the lenses back to the factory or to a service center. *zeiss.com/cine*

ZEISS XD Updates



RED has implemented reading and recording of ZEISS XD (distortion and shading) by the camera. The firmware will be ready in Q3 of 2018. ZEISS will release additional plugins to use eXended Data with Nuke, Adobe Premiere and Adobe After Effects. DaVinci Resolve has already implemented XD.

Ambient's Master Lockit is still a tool of choice as it also allows the use of Pomfort Livegrade and Silverstack to create looks on set.

Transvideo's StarliteHD-e monitor-recorder records XD data onto an SD card.

Transvideo StarliteHD-e

Transvideo's StarliteHD-e monitor-recorder displaying its latest focus puller menu, connected to ARRI Alexa Mini and Cooke /i lens

New Transvideo products will be exhibited at NAB in the following partners' booths:

ARRI will have the Transvideo StarliteHD2 monitor-recorder with a new firmware upgrade providing increased resolution and reduced latency. Direct readout of lens metadata (focus, depth of field, near focus, far focus, aperture, and focal length) make the StarliteHD2 an excellent choice for Focus Pullers. The upgrade will be available for all existing StarliteHD monitors worldwide for a cost of 145 Euros. (ARRI booth C7925)

Canon will show the StarliteHD-Canon on an ME-200S-SH camera. This version of the StarliteHD provides a touch-screen interface to Canon's ultra-light, high-ISO camera. Full access to camera menu is provided, as well as shortcuts for specific adjustments. (Canon booth C4325)

Tiffen will demonstrate the latest evolution of the Transvideo CineMonitorHD8-XSBL on their high-end rigs. This latest version of the CineMonitorHD has 2500 Nits brightness and exceptional contrast ratio. (Tiffen booth C5625)

At the ZEISS booth, the Transvideo StarliteHD-e monitor-recorder will be shown with its interface for ZEISS eXtended data lenses and Cooke/i technology lenses. The ZEISS eXtended Data is a new technology based on Cooke /i and provides information about lens distortion and shading characteristics in real time. The lens information is captured along with the relevant camera time code and stored on an SD-card. (ZEISS booth C3639)

aatontransvideo.com

Aaton-Digital

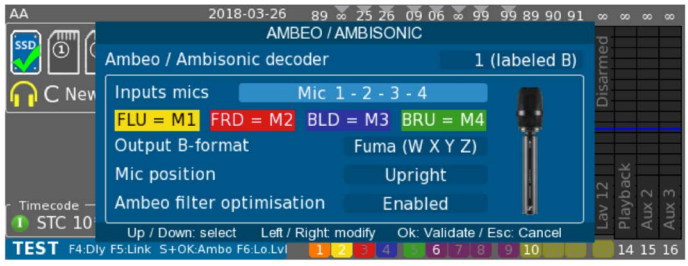
Aaton-Digital audio products will be at the Wisycom and Sennheiser booths during NAB.

Wysicom will exhibit the Aaton-Digital CantarMini digital 16 track sound recorder on a new lightweight support compatible with Wisycom's receivers, giving direct access to the user interface of the receiver from the Cantar allowing set-up of options or channel frequencies. (Wisycom booth C856)

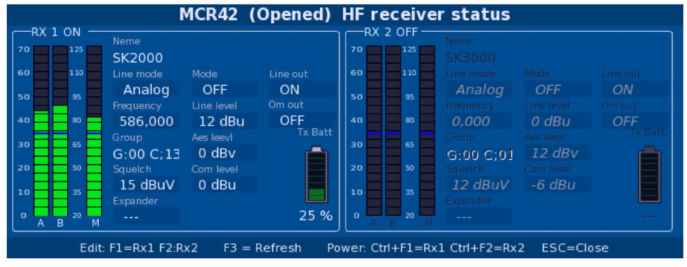
Sennheiser will promote the integration of AMBEO technology in the Aaton-Digital Cantar family with A-B conversion, and immersive audio for VR, animation, wild life and sound design. The CantarX3 digital 24 track location recorder includes the possibility to use 2 Ambeo microphones at the same time. An Aaton-Digital CantarX3 will be shown with double AMBEO integration. (Sennheiser booth C1307)

Aaton-Digital has announced that from now on, the CantarX3 and the CantarMini will be delivered with Sennheiser AMBEO compatibility.

aatontransvideo.com



Sennheiser AMBEO menu



Wisycom receiver status when connected to Cantar Mini

Steadicam M1 Volt

M1 Volt is a horizon leveler for Steadicams.

The Steadicam M1 Volt has been described by some camera operators as the greatest thing for Steadicam since the beginning of time. Imagine—no more distractions of bubble levels or horizons on monitors. M1 Volt keeps you on the level.

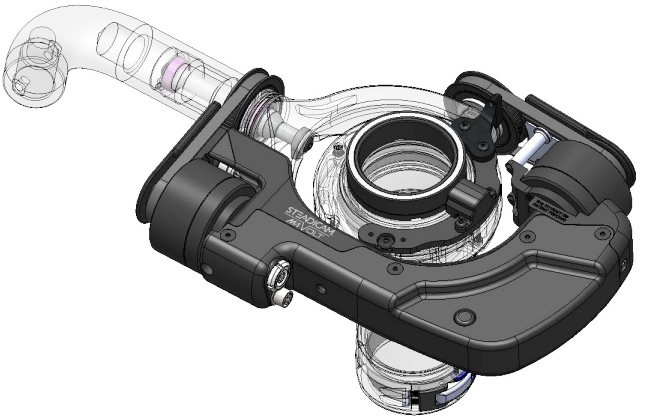
It holds the sled in neutral balance, and stays level when starting, stopping, and cornering. The operator can switch from full Volt auto assist mode to conventional operation with the push of a button.

M1 Volt easily attaches to any existing Steadicam M1 sled, adding only 2 extra pounds. There are two parts. The control box fits below the Stage. The stabilizer attaches to the Gimbal.

In addition to level horizons, the M1 Volt holds a tilt angle when you let go. Rebalancing is not required.

Visit Tiffen, celebrating their 80th anniversary, at NAB booth C5625.

tiffen.com *steadicam.com*



Angenieux 42-420 T4.5 Anamorphic Zoom

It is an inescapable reality of life on location that zoom lenses will be an essential part of almost every camera package. Zooms are equally *de rigueur* on studio productions, even when a case full of primes are listed on the equipment order.

With anamorphic cinematography enjoying a new wave of world-wide appreciation, Angenieux now proposes a second Long Range A2S lens, based on the Optimo 44-440 A2S which was introduced in April 2016. The new 42-420 has even less distortion than the 44-440, which already was minimal.

The rear group of the lens contains cylinders and spherical elements that provide a 2x horizontal squeeze with excellent optical performance, minimal distortion and negligible breathing. The aperture is T4.5 across the entire zoom range; there is no ramping. The 42-420 provides silky, smooth skin tones and aesthetically pleasing bokehs, with a classic anamorphic shallow depth of field that elegantly separates the actors from the backgrounds.

Angenieux's IRO (Interchangeable Rear Optics) technology lets you easily convert the Optimo 42-420 anamorphic zoom to a spherical 25-250 T3.5 zoom. Simply unscrew the anamorphic rear group and swap it with an optional spherical kit that also includes the appropriate focus, iris and zoom rings.
angenieux.com

- 2x horizontal squeeze using cylindrical optics in rear group.
- Uniform color, contrast, resolution and low distortion.
- Constant T4.5 across zoom range, no ramping.
- Minimal breathing of focus (image size remains constant).
- Close Focus of 1.24m /4'1".
- Reduced distortion at all focal lengths and all focus distances.
- Lighter and more compact long range anamorphic zoom.
- Focus ring with scale rotation of 320° rotation and more than over 40 focus marks. Interchangeable focus scale rings marked in feet or meters.
- Available in PL mount. Easily interchangeable with PV Panavision and other lens mounts.
- Spherical kit option converts anamorphic 42-420 to spherical 25-250 T3.5 zoom by swapping rear group and rings.
- Rugged cam and rod zoom and focus group mechanics.
- Can use 1.4x and 2x extenders. 84-840mm T9 (with 2x).
- Built-in encoder provides lens metadata (focus, iris, zoom) via standard /i technology in both spherical and anamorphic configurations.
- Lens data can be displayed on camera monitors to assist critical focusing and recorded in camera.
- Front thread for optional protective glass.
- Accessories: DSLR mounts, 1.4 and 2x, front protective glass
- Temperature range: -20°C to +45°C.

Lens	Angenieux Optimo 42-420 mm T4.5 A2S Anamorphic Zoom	Angenieux Optimo Style 25-250 T3.5 Spherical Zoom
Zoom Ratio:	10x	10x
Anamorphic Squeeze	2x anamoprhic	Spherical - desqueezed
Focal Length:	42 - 420 mm	25-250 mm
Aperture:	T4.5	T3.5
MOD (Close Focus):	4' 1" / 1.24 m	4' / 1.22 m
Image Coverage:	28.8 mm diagonal (18.6 x 22 mm) - S35	31.4 mm - S35
Weight (approx.):	16.7 lb / 7.6 kg	16 lb / 7.3 kg
Length (PL mount to front):	414 mm / 16. 3"	377.4 mm / 14.9
Front Diameter:	136 mm	136 mm
Mounts:	PL. PV or EF mount available on request	PL. PV or EF mount available on request

Angenieux 36-435mm T4.2 Full Frame Ultra 12x Zoom

Angénieux Optimo Ultra 12x FF /VV 36-435mm T4.2 (46.3mm Image Diagonal)

The new Angenieux Optimo Ultra 12x is the high-end, long range zoom for the new Full Frame era. This is a redefinition of the classic 12x zoom ratio that launched a thousand Super35 spherical zooms (and more) onto productions since 2001— the famous Angenieux 24-290.

In case you still find yourself shooting Super35, the new Ultra 12x gains speed. Interchangeable modules cover sensor sizes from S35 to Ultra35 (34.6mm ∅), boosting aperture speed in the process. While Full Frame wide open is T4.2, it opens to T2.8 in Super35.

Changing formats is simple. Unscrew the IRO rear assembly, swap the focus, iris and zoom rings, and attach the new rear group. The ingenious format flexibility of the Optimo Ultra 12x offers rental houses and owners a wide choice of formats, focal lengths and apertures in one lens with three sets of rear groups and barrels.

Nevertheless, at this NAB, I'm sure the buzz will be all about larger formats: Full Frame, Full Format, Large Format, 8K VV.
angenieux.com

Lens	24-290mm	26-320mm	36-435mm
Format	S35	U35 (S35+)	FF / VV
Focal length (mm)	24-290	26-320	36-435
Aperture	T2.8	T3.1	T4.2
Image Circle (mm)	Ø 31.1	Ø 34.6	Ø 46.3
Iris Blades	9	9	9
Front diam. (mm)	162	162	162
Length (mm)	472mm	481mm	523mm
Length (inches)	18.6"	18.9"	20.6"
MOD (meters)	1.22 m	1.24m	≤1.5m
MOD (feet)	4'	4'1"	≤5'
Weight (kg)	12.6 kg	12.75 kg	12.75 kg
Weight (lb)	27.7 lb	28.1 lb	28.1 lb

Angénieux Type EZ Full Frame Compact Zooms

22-60 T3.0 EZ-2 FF

Type EZ-2 FF 22 - 60mm T3
Zoom Ratio: 2.7x
Image Diagonal: 46mm
Aperture: T3.0 - 32
MOD: 0.6m / 2'
Front Diam: 114mm
Length: 210 mm / 8.3"
Wgt: 2.07 kg / 4.6 lb

Angenieux Type EZ Zoom Lenses are convertible, affordable, compact zooms that cover beyond Full Frame. Exchangeable rear lens groups let you swap between Full Frame (up to 46mm image diagonal) and Super35mm. The Angenieux EZ-2 covers wide angles. Configured for FF, it is a 22-60mm T3 zoom. Configured for S35, it is a 15-40mm T2 zoom.

45-135 T3.0 EZ-1 FF

Type EZ-1 FF 45-135mm T3
Zoom Ratio: 3x
Image Diagonal: 46mm
Aperture: T3.0 - 32
MOD: 0.6m / 2'
Front Diam: 114mm
Length: 226 mm / 8.9"
Wgt: 2.05 kg / 4.5 lb

The Angenieux EZ-1 covers a standard zoom range. With the FF Rear Lens Group, it is a 45-135mm T3 zoom. With the Super35 Rear Group attached, the EZ-1 is a 30-90mm T2 zoom.

angenieux.com bandpro.com jcinecast.com

SIGMA FF High Speed Primes at AFC Micro Salon

Above: Kazuto Yamaki, CEO of Sigma Corporation. Photographed with SIGMA Full Frame FF High Speed Cine Prime 85mm at T1.5 with Sony α9.
Below, from left: Foucauld Prové, Sigma France; Kazuto Yamaki; Baudouin Prové, Managing Director of Sigma France.

SIGMA Art Lenses

Sigma Corporation of America presents its line of Cine FF High Speed Full Frame lenses along with the new 14-24mm F2.8 DG HSM Art lens and Art lenses in E-mount at NAB (booth C10308).

As the worlds of cinematography and still photography continue to converge, it's instructive to watch what Sigma is doing with their superb Art series of lenses and how these designs converge with Sigma's respected Full Frame High Speed Primes.

Respected lens geeks have turned in rave reviews. DXOMark Image Labs wrote, "Sigma's Art series primes are the company's high-speed f/1.4 models that are designed to compete with the very best lenses from Canon and Nikon, and can even give legendary lens maker ZEISS a run for its money.

"A DxOMark score of 50 points and peak sharpness of 36-Mpix for the new Sigma 85mm F1.4 DG HSM A is the highest in our database. The new Art-series lens has far superior sharpness wide open at f/1.4 — and not just in the centers, but across the frame from corner to corner."

Lensrentals wrote, "It's not very often that a lens wows me with excitement by a simple announcement, but Sigma did just that when they announced the 135mm f/1.8 Art Series Lens... I'm following their developments more than any other brand within the photography and videography market."

So when a new Sigma lens like the 14-24mm F2.8 DG HSM Art Full Frame wide aperture zoom lens appears, it's a good idea to pay attention. We cinematographers love wide angle zooms—for aerials, underwater housings, POVs, drones, rigs, cars and anywhere else you want to get up close and all-encompassing. This is pure speculation, but wouldn't it be nice to have a CINE FF version of this new Sigma Art Lens zoom?

But you don't have to wait. The new Sigma 14-24mm F2.8 DG HSM Art lens comes in Canon, Nikon and Sigma mounts and works with Sigma's MC-11 Sony E-mount converter. The Nikon mount features a new electromagnetic diaphragm, and the Canon mount is compatible with the Canon Lens Aberration Correction function.

The new Sigma 14-24 achieves legendary Art lens sharpness with 3 FLD glass elements, 3 SLD glass elements, and 3 aspherical lens elements, including one 80mm high precision molded glass aspherical element. Sigma manufactures everything at their Aizu factory in northern Japan. Molded aspherical elements are a specialty of Sigma and they make some of the largest diameters.

The Sigma 14-24 exhibits almost no distortion (less than 1%) and minimal transverse chromatic aberration, flare or ghosting. It remains at a consistent f/2.8 throughout the entire zoom range and delivers optimal image quality at every focal length and distance. The high-speed autofocus is extremely accurate.

The 14-24mm F2.8 DG HSM Art zoom has a dust and splash-proof design with special sealing at the mount, manual focus ring and manual zoom ring.

Breaking News. Sigma launches more new lenses:

Sigma 105mm F1.4 DG HSM Art

Sigma 70mm F2.8 DG MACRO HSM Art

Sigma Interchangeable Lenses for Sony E-mount

- 14mm F1.8 DG HSM Art
- 20mm F1.4 DG HSM Art
- 24mm F1.4 DG HSM Art
- 35mm F1.4 DG HSM Art
- 50mm F1.4 DG HSM Art
- 70mm F2.8 DG MACRO Art (totally new)
- 85mm F1.4 DG HSM Art
- 105mm F1.4 DG HSM Art (totally new)
- 135mm F1.8 DG HSM Art

With the same high-performance optical design as other lenses in the Art line, the new Sigma Art lenses with Sony E-mounts have a newly developed control algorithm that optimizes the autofocus drive and maximizes the data transmission speed.

These lenses will be compatible with Sony's continuous autofocus (AF-C) and high-speed autofocus, which are not addressed by Sigma's Mount Converter MC-11. As with the converter, the lenses will be compatible with in-camera image stabilization and in-camera aberration correction, which includes correction for peripheral illumination, chromatic aberration and distortion.

Fujifilm X-H1 APS-C with 4K Video

Please welcome FUJIFILM's new top-of-the-line mirrorless still camera, the X-H1. It has a similar sensor as the beloved X-T2, but adds in-body image stabilization, a newly designed body and additional features and video options.

The new FUJIFILM X-H1 has a 24.3 megapixel APS-C CMOS sensor and in-body image stabilization (IBIS), a new Flicker Reduction mode for fluorescent and mercury lighting locations, DCI 4K and more.

"The new X-H1 is our first X Series model to feature in-body image stabilization, and we are very excited to introduce this camera to the market," said Yuji Igarashi, General Manager of the Electronic Imaging Division & Optical Devices Division at FUJIFILM North America Corporation.

New 5.5 Stops In-Body Image Stabilization

The X-H1's in-body image stabilization uses 3 axial accelerometers, 3 axial Gyro sensors, and a specially-developed dual-processor that performs approximately 10,000 calculations per second. Its 5-axis image stabilization works with all XF and XC lenses. This offers the equivalent of 5.5 stops faster shutter speed. A new spring mechanism has been added to reduce micro-vibrations caused by the mechanical shutter. The electronic front curtain shutter or electronic shutter can also be used for additional image steadiness.

Weather-Resistant Body Design

In addition to its dust and water-resistant properties and ability to operate in temperatures as low as 14°F / -10°C, the X-H1 also has a 25% thicker magnesium alloy body than the X-T2.

The OLED viewfinder is extremely high resolution, at 3.69 million dots. The 3-inch, 1.04 million dot touch-panel LCD can be tilted to a variety of angles. A 1.28 inch sub-LCD on the top of the camera emulates the design of the mirrorless medium format GFX 50S and gives instant confirmation of shooting information.

Video Features

The X-H1 is the first camera in the X Series to include ETERNA, a new mode that simulates motion picture film looks, with understated colors and rich shadow detail. After all, FUJIFILM manufactured motion picture film since 1934.

The X-H1 can record 1080p video to 120 fps. It has F-log LUT, DCI 4K shooting mode (4096×2160); a 400% dynamic range setting (approximately 12 stops); 200 Mbps high bit-rate recording; a high-quality internal microphone (24 bit/48 kHz); and time code.

FUJIFILM X-H1 Specs

- 24.3MP X-Trans CMOS III Sensor with primary color filter and X-Processor Pro Processor
- 5-axis 5.5 stops in-body image stabilization
- Viewfinder: 0.5 inch, approx. 3.69 million dots OLED Color
- Weather-resistant; temperature range to 14°F/-10°C
- ISO Sensitivity: 200-12800 (1/3 steps)
  Extended ISO: 100, 125, 160, 25600, 51200
- LCD Monitor: 3.0 inch, 3:2 aspect ratio, approx. 1.04 million dots, touch-screen color LCD monitor(approx. 100% coverage)
- Continuous Shooting: 14.0 fps (with Electronic Shutter), 8.0 fps (with Mechanical Shutter)
- Video Recording (using UHS Speed Class 3 or higher SD card)
  4K (4096×2160) 24P / 23.98P up to approx. 15min.
  4K (3840×2160) 29.97P / 25P / 24P / 23.98P to ~15 min.
  Full HD (1920×1080) 59.94P / 50P / 29.97P / 25P / 24P / 23.98P up to approx. 20min.
  HD (1280×720) 59.94P / 50P / 29.97P / 25P / 24P / 23.98P up to approx. 30min.
- New ETERNA film simulation mode simulates motion picture film, subtle colors and rich shadows
- New Flicker Reduction Mode: stable exposure during burst shots even under fluorescent and mercury vapor lighting

Availability and Price

The X-H1 Body is available now for $1,899.95.
The X-H1 Body with Vertical Power Booster Grip Kit is $2,199.95.

Fujinon MKX Zooms with X Mount

You have just ordered a new FUJIFILM X-H1 X Mount camera, and wonder how nice it would be to have lightweight, affordable cine-style zoom lenses? Now you can.

FUJINON MKX 18-55mm T2.9 and FUJINON MKX 50-135mm T2.9 cinema lenses are new additions to the X Series line of interchangeable lenses.

These are the zooms that were originally introduced in E-mount, with an 18mm flange focal depth. Now they come in FUJIFILM's X-mount, with a flange focal depth of 17.7 mm.

"The growth of video production has created a large demand among videographers and cinematographers for compact and easy-to-use lenses," said Yuji Igarashi. "Fujifilm has recognized this need and has introduced the MKX18-55mm and MKX50-135mm lenses, offering a lightweight design and affordable price point, while delivering great optical performance and operability as other professional cinema lenses."

Many still photography zoom lenses are not great for video production because they are not parfocal. In other words, you have to refocus as you zoom in or out. The MKX lenses were not initially designed for still photography—they were intended as affordable, lightweight, cine style zooms. But because of all these things, they are wonderfully versatile for both stills and cine.

The optical and mechanical design of these new MKX lenses minimizes optical axis shift while zooming. The front internal focusing system also minimizes lens breathing.

The focus ring rotates of a full 200 degrees. All lens gears have an industry-standard 0.8 mm pitch. The iris is, of course, clickless. The gears for all three rings are in the same position. Front diameters are 85mm and have 82mm filter threads. Both zooms are equipped with a macro push-button function.

FUJINON MKX 18-55mm T2.9

- Weight: 1,080g
- Maximum diameter x length: 87mm x 206.6mm
- 22 glass elements in 17 groups with 6 super extra low dispersion lens elements and 2 extra low dispersion lens elements
- Aperture: T2.9 - T22
- Close focus to 0.85m / 2ft 9" with wide macro function and 0.38m / 1ft 2.9" at wide end

FUJINON MKX 50-135mm T2.9

- Weight: 1,080g
- Maximum diameter x length: 87mm x 206.6mm
- 22 glass elements in 17 groups with 2 extra low dispersion lens elements and 2 super extra low dispersion lens elements
- Aperture: T2.9 - T22
- Close focus to 1.2 m / 3 ft. 11" with wide macro function and 0.85 m / 2 ft. 9" at wide end

The FUJINON MKX18-55mmT2.9 lens will be available in Spring/Summer 2018 for $3,999.95.

The FUJINON MKX50-135mmT2.9 lens will also be available in Spring/Summer 2018 for $4,299.95.

fujifilm-x.com/cinema/

Preston Cinema Updater Dongle and Apps

Preston Cinema Bluetooth Updater Dongle

Preston FI+Z software updates and lens database management via smartphone

The Preston Cinema Systems Updater is a small Bluetooth dongle with powerful capabilities. It works in conjunction with Preston's new Updater app for iOS and Android. A notification will appear on your phone when a new firmware version is released. The firmware on Preston Cinema Systems devices can then be immediately updated anywhere cellular data or WiFi is available.

The Preston Bluetooth dongle also transfers Hand Unit 3 lens data to Apple and Android smartphones. The smartphone stores the lens data in a database created by the Preston Updater app.

The Preston app lets you select lenses from the database to be uploaded to an HU3.

The lens data can also be transferred from your smartphone to the Preston Cinema Systems Lens Management app running on Mac or PC. This app serves as a lens inventory database with virtually unlimited space. Individual lenses or groups of lenses can be selected and uploaded to a Hand Unit. This enables a quick and efficient method for rental houses and focus pullers to set-up Hand Units with their accompanying lens package.

Mobile App Overview

To update a FI+Z device to the latest software version:

Plug the Updater Dongle into the Serial port of any Preston FI+Z HU3, MDR3, MDR4 or LR2 unit. Be sure the unit is turned off. Prepare the device for upload:

- For the HU3, press the Iris set button then the power button.
- For motor drivers, hold the Reset button, then connect power to the device. Release the reset button.
- To update the Light Ranger software, plug the Updater into the serial port and then apply power.
- To Update the Video Interface Unit, plug the Updater into the serial port, press and hold the Menu key, and then apply power.
- Open the Updater app on the iPhone. Each Updater has a unique serial number. When that number appears on the iPhone display choose Connect.

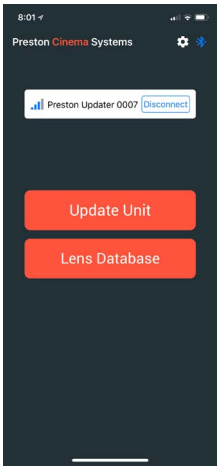


Fig. 1

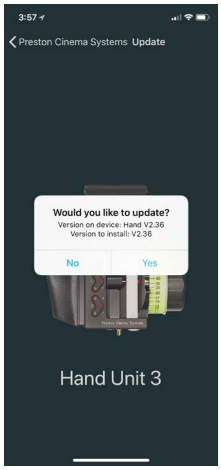


Fig. 2

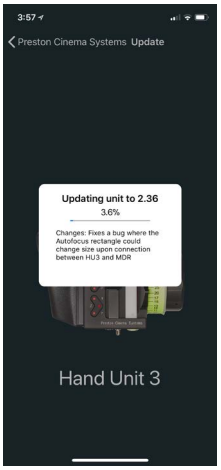


Fig. 3

- When the smartphone display shows that it is connected to the FI+Z unit, select Update Unit *(above left, fig 1)*.
- The Updater reports the current software version and asks if you want to replace it with the current version *(above fig 2)*.
- Choose yes. The progress bar *(above fig 3)* indicates the percentage of completion.

To download the Preston HU3 lens database to the phone:

Power the HU3 normally (not in programming mode) and plug the Updater unit into the serial port. Select Lens Database *(below, fig 4)*. The HU3 lens folders are displayed *(below, fig 5)*. Touch the down arrow ↓ to download lenses. The contents in any of the folders can be expanded *(below, fig 5, 6)*.

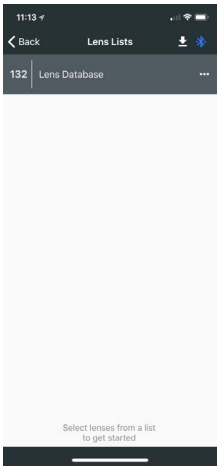


Fig. 4

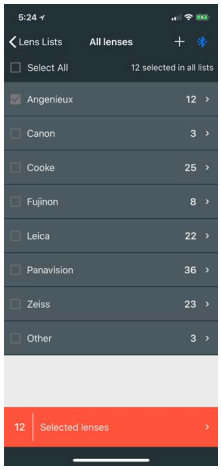


Fig. 5

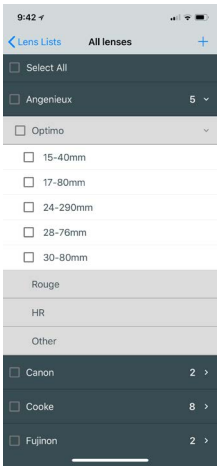


Fig. 6

Preston Updater, cont'd

To send lenses to the HU3 and share:

- First use the checkboxes *(6)* to select them. Touch Send *(7)*.
- Choose a send option and Send *(8)*.
- The status bar shows the progress in sending lens data to the HU3 *(9)*.

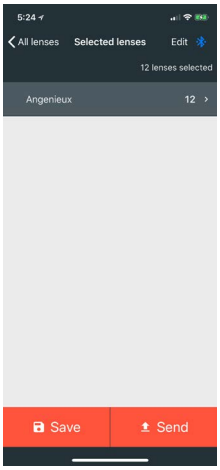


Fig. 7

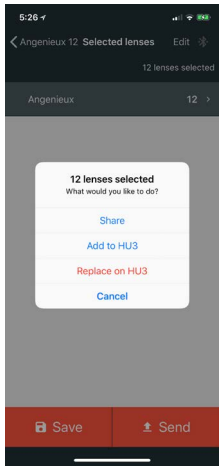


Fig. 8

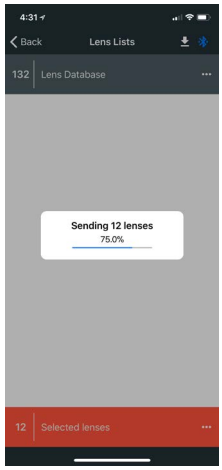


Fig. 9

- The Share option allows the lens data to be transferred in a number of ways (10).
- The options for the Save selection are shown *(11)*. Updated!

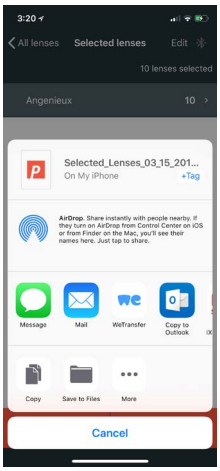


Fig. 10

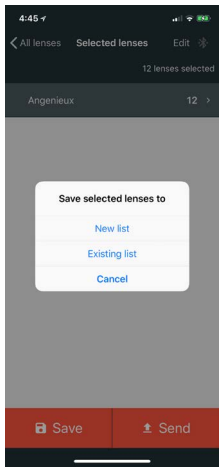


Fig. 11

Fig. 12

Download the Preston Cinema app from Apple iTunes store.
prestoncinema.com

Preston Cinema Updater Dongle Specs

Size:	2.50 x .94 x .80 inches
Weight:	28 g
Product No:	6100
FCC ID:	SH6MDBT40
Japan MIT:	R 204-420020
CE:	E1/2017/40113C

Preston LR2 Hybrid Mode

The Preston Light Ranger 2 Hybrid mode of operation provides an automatic transition from Manual to Autofocus. Here's an example:

1. Select LR2 Hybrid mode from the HU3 menu *(fig.13)*. (This is a new feature).

Fig. 13

The AF rectangle on the monitor is yellow instead of red, indicating Hybrid mode operation *(fig 14)*.

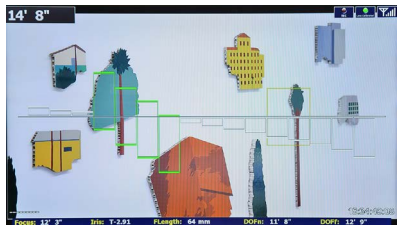


Fig. 14

2. Use the HU3 navigation key to place the autofocus zone over the subject to which focus is to be pulled (subject 2).

3. Press the AF button on the HU3 and use the focus knob to set the focus to the first subject.

4. Press the AF button again to "arm" the Hybrid mode. A yellow H appears in the upper right of the monitor *(fig 15)*. It is ready to transition to AF.

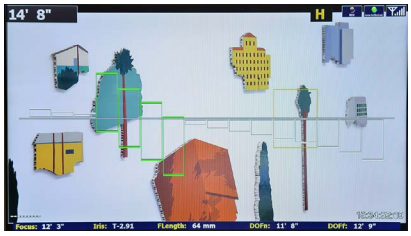


Fig. 15

5. When the cue is given to pull focus to subject 2, use the focus knob to pull focus at the desired speed.

6. When the focus knob setting is within the Depth of Field for subject 2, the LR2 switches automatically to AF mode *(fig 16)*.

Fig. 16

The focus automatically tracks subject 2 until the AF button is pressed, after which the mode returns to Manual.

In Hybrid mode, the transition between Manual and AF modes is seamless and invisible.

The Hybrid mode allows the focus puller to control the speed of focus without risking a focus buzz.

Before Hybrid mode, the focus puller would set up the shot as described above in steps 1-3. However, when the AF button on the HU3 was pressed, the focus motor moved the lens ring at maximum speed. Now it is organic.

Whitepoint Optics TS70 Large Format Primes

Hanna Myllyniemi taken with Whitepoint 100mm at T3.5 on Sony α9.

Whitepoint Optics in Helsinki, Finland reworks, rehouses and recreates venerable vintage V-series Medium Format Hasselblad/ZEISS optics into high-end Large Format cine lenses. The optical elements from these distinguished Medium Format still lenses were made by Hasselblad/ZEISS from 1979-1989.

The Whitepoint TS70 primes come in classic focal lengths of 30, 40, 60, 80, 100 and 120 mm. Additional 150, 250 and 500 mm lenses are in the works. They all cover ARRI Alexa 65, RED 8K VV, Panavision DXL2, Sony VENICE, Canon C700 FF and other large format cameras. The image circle is an astonishing 82mm diameter. The rear mount unscrews and the lenses are available in PL, EF and E-mount. XPL and LPL are coming.

If you have been lusting after Arriflex 765 lenses, sometimes rentable but rarely owned (not many were made), here's a chance to have the same glass, albeit with a different look, all for yourself.

The Whitepoint Optics primes have consistent 114mm front diameters. Focus and iris gears are in the same positions. The mechanics and housings are well-made and rugged.

The look is sharp with pleasingly smooth textures and skin tones. For those raking two-shots in the front seats of cars, and other depth-of-field defying setups, Whitepoint Optics supplies a Swing-Tilt mechanism for every lens. That's the reason for the name: TS70 as in Tilt and Swing, and 70 for Large Format. The maximum swing or tilt is 9 degrees and it does not vignette. Locking and unlocking is easy.

Whitepoint Optics TS70 lenses have shot several Netflix features as well as commercials in Europe and USA. They are currently at major rental houses across the US, Canada and Europe. At NAB, see Whitepoint at Band Pro, their worldwide partner. (C10618.)
whitepointoptics.com *bandpro.com*

From left: Timo Alatalkkari, Hanna and Jussi Myllyniemi at RVZ's Micro Salon booth in Paris.

Chief lens technician Timo Alatalkkari.

Whitepoint Optics TS70, cont'd

Whitepoint Optics TS70 Large Format Prime Lens Series

Lens	T-Stop	MOD	Front Ø	Length	Weight
30 mm	T3.5 – 22	0.35 m	114 mm	155 mm	2.75 kg
40 mm	T4 – 32	0.35 m	114 mm	151 mm	2.63 kg
60 mm	T3.5 – 22	0.45 m	114 mm	120 mm	1.74 kg
80 mm	T2.8 – 22	0.65 m	114 mm	115 mm	1.54 kg
100 mm	T3.5 – 22	0.80 m	114 mm	121 mm	1.52 kg
120 mm	T4 – 32	1 m	114 mm	147 mm	1.85 kg

- Lens Mount: PL, E, and EF – Stainless Steel
- Front Diameter: 114mm
- Image circle: 82mm
- Matched Focus/Iris Ring Locations at all focal lengths)
- Iris Blades: 10, Circular
- Focus Scale: Metric/Imperial
- Tilt-Swing (Optional for all lenses): 9° (no vignetting or distortion, S35 - Alexa 65).

A Brief History of Whitepoint Optics

Jussi Myllyniemi is Product Manager at Whitepoint in Helsinki. He is also a prominent colorist and producer. Whitepoint provides production services, grading and high-end post production. Aleksis Pillai is the CEO. They grade footage daily, discussing looks with DPs and talking color science constantly.

Wouldn't it be a natural progression for people who "agonize" day in and day out about looks, LUTS, style and color—with especially long Finnish winters and white nights to think these things through—to wonder, "Why don't we build lenses?"

Jussi and Aleksis showed up at FDTimes a few weeks ago. Jussi told the story about how their lens business began: "I'm a long distance runner. I do marathons with a good friend, Timo Alatalkkari. He has been head of a respected lens repair and optical shop for the past 10-15 years, specializing in ZEISS, Leica and Hasselblad. He was trained at the ZEISS Jena factory in the 1980s. About two years ago, I asked Timo if he could rehouse some lenses for us and he said yes, why not. Timo is an enthusiastic can-do guy. He never says no. He's worked on everything from microscopes and camera lenses to large industrial optics.

Timo is not afraid of new adventures. We did a lot of research and talked to DPs about what they were looking for. They all wanted something to add life to their images. I wanted to be part of this adventure because as a colorist, I'm working all the time with cinematographers, hearing about the lenses they are using and the styles they are seeking. It's all about looks, artistic approach and technical excellence. It also must satisfy creative and aesthetic dreams and wishes.

"So, we started Whitepoint Optics. We have a representative buying vintage ZEISS/Hasselblad lenses all over the world. We select the best lenses, take out the glass elements and throw the rest away. We only use the glass. We build new mechanical assemblies from scratch and modify the optics. The mechanism is a combination of cams and threads. The stainless steel end stops are very rugged. The lenses don't have shims. They are adjusted by loosening 4 screws and adjusting the focus scale.

"I've always been fascinated by cinema. I ran a film festival for many years in Finland. I've always tried to look ahead. It's a democratization of the art—to make the proper tools for everyone."

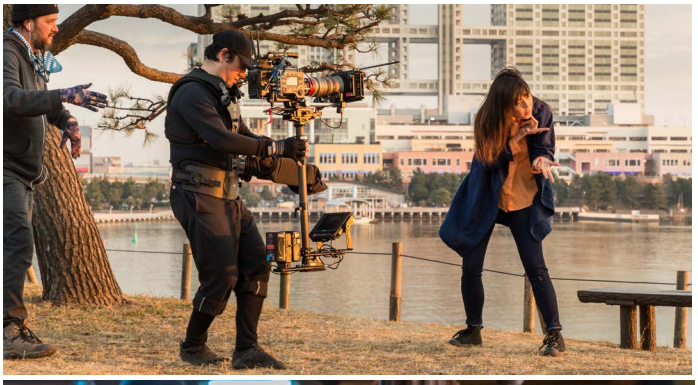
From left: Aleksis Pillai and Jussi Myllyniemi at FDT in NYC.

Jussi Myllyniemi with Whitepoint 60 mm, photographed with a 100 mm.

VENICE in Tokyo with Band Pro

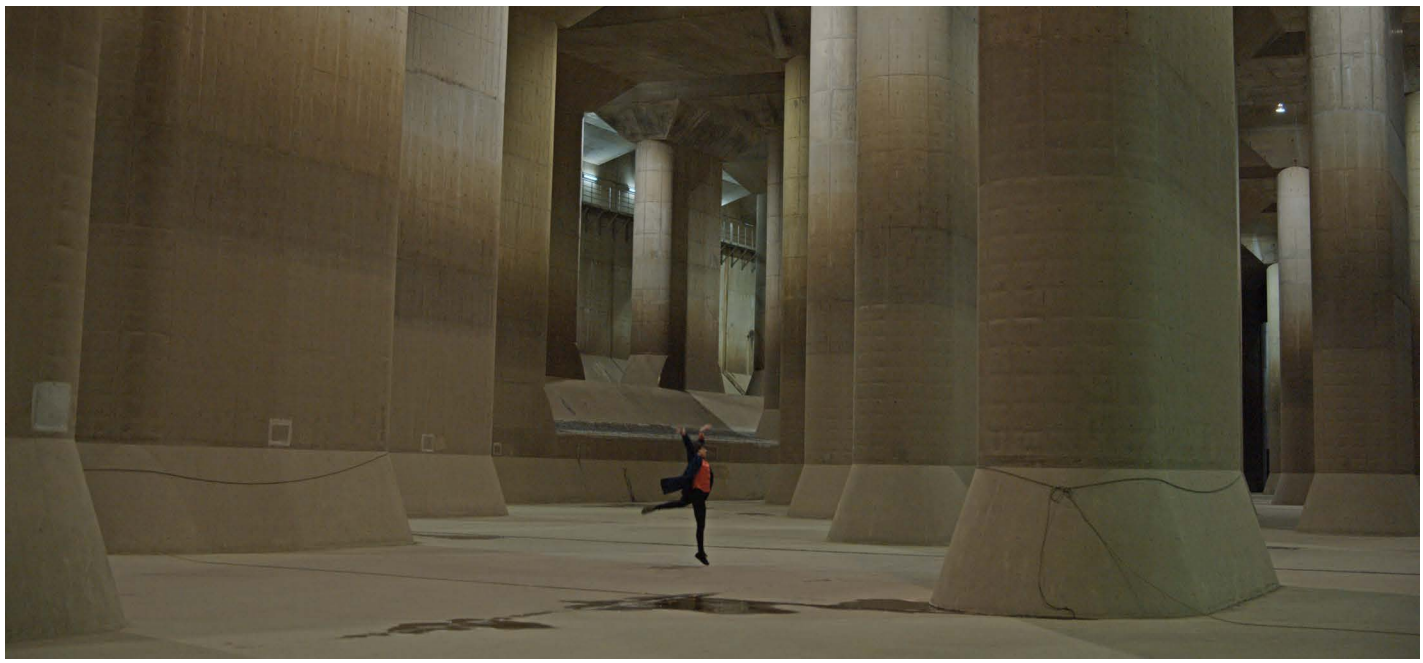
by Randy Wedick, Cinematographer and Band Pro Senior Technical Consultant

I traveled through Japan with a crew to make a demo film for the new Sony VENICE camera. My mother is from Japan and I've been visiting all my life. I have been photographing there extensively in the last 6 or 7 years, so I already had some choice locations in mind. Luckily, my friend Katie Malia was traveling with us as well. She is a very talented dancer. So we arranged to film her performing an improvised dance piece and we would have the Sony VENICE "dance" with her throughout a variety of locations. We'd shoot magic hour and high noon, with hard sun and soft light, and underground under artificial lighting. We would also change out the wardrobe and location colors to see how the camera picked up the subtleties.



We contacted our Tokyo producer Allan McIntyre and he got us in touch with local Tokyo Steadicam operator Tetsuo Suzuki. Peter Crithary from Sony contacted Takahiro Kagawa in the Atsugi office and had a camera delivered to Sanwa Cine Equipment Rental Company in Tokyo where we were checking out. Osamu Tsukada from Leica CW Sonderoptic and Yasuhiko Mikami from Angenieux brought Full Frame lenses: the Leica Thalias and the Angenieux EZ lenses. Masa Yasumoto and Yoichi Kunii from Sanwa Cine oversaw a first class prep for our skeleton crew. Joel Knoernschild was my 1st AC. He is also a talented director and helped me with some of the direction, leaving me free to supervise the visuals.

We shot in 11 locations over the course of the next 3 days. Some of them were long-time favorites of mine, others were suggested by our producer Allan, who has worked on many shoots in Tokyo and knows some great spots. We were very lucky to shoot in the Tokyo Metropolitan Area Outer Underground Discharge Channel, which is an enormous underground tunnel facility straight out of a sci-fi movie or James Bond set. It controls the flood water and rain water flow for all the water around the entire Tokyo Metro area. We took advantage of our one sunny day and shot on the beach in Odaiba and also in the Yushimi Tenjin Temple which was having the Ume Matsuri (Plum Blossom Festival) at the time,



where the plum trees flowered in brilliant pink, which we mirrored in our wardrobe choice for that scene.

We flew the camera on a Steadicam all three days. Suzuki-san, our Steadicam Operator, is married to a dancer, and was able to find the rhythm of the improvisation rather quickly, which was essential. For a few shots, we stripped down to sticks or a sandbag on top of an apple box.

Now that I am back in LA and looking at the footage, I'm able to draw some conclusions on the image quality of the VENICE as well as the lenses.

The Sony VENICE is the first camera that I am aware of that has a color palette that exceeds Rec 2020. That is a big deal, as it means that almost no colors are out of bounds. This means smoother transitions between colors and also leads to richer shadow saturation and highlight detail, both of which are very important when you are delivering in HDR. One of the big things I have seen with HDR displays is not just the amazing contrast range and ability to deliver super bright peak whites, but also to hold color saturation deep into the shadow region. This is one of the hidden reasons why HDR imagery is so impressive.

The S709 LUT that is shipped with the camera is an enormous artistic step for Sony. They worked closely with some bright minds in Hollywood to create a transform that will take the vast amount of dynamic range and color space and shape it into a pleasing, gently rendered, beautifully artistic-looking image. Often in the past, Sony cameras have been associated with the look of very accurate tones, but with a broadcast sensibility. This camera makes a departure from that look and creates cinematic imagery through its color palette and contrast rendering.

We shot on two ends of the economic spectrum, using Leica Thalia primes, which are extremely high-end lenses that are often used on the Alexa 65. We were lucky to have the current set of 5 lenses (30, 45, 55, 120, 180 mm) so we could frame up a lot of different shots with those choices. The 55mm lens played on the camera quite a bit. It is a custom-made focal length, not descended from an existing still lens. These lenses are extremely beautiful. The coatings on them allow for tight sharpness and flare to exist at the same time. There is a lot of pleasing micro-contrast in the rendering, which means great details for the subjects that are in focus and pleasant roll off into creamy softness for the out of focus areas. It's really an incredible look. We commonly shot backlit into the sun and often flared the lens. These lenses have very beautiful coatings and elegant designs which result in some complex and beautiful flares.

In a few locations I knew we would only have 10-15 minutes to shoot and didn't want to lose a few minutes for a lens change and Steadicam re-balance. We needed a zoom that would cover a Full Frame 36x24 mm imager, so we got the EZ lenses from Angenieux. These gave us the coverage we needed but also maintained a T3 stop wide open and cinematic rendering as well. They offered less micro-contrast than the Leicas, but still rendered beautiful gentle images, and with pleasing flares. The sunset shots at Odaiba beach and the sequence in the underground water channel were shot on these lenses.

The Sony VENICE is a 1.0 camera and there are still many firmware revisions left to come, opening up many key features. Nevertheless, one thing I can say is that the camera works, it never crashed, it always rolled when we needed to roll. It makes beautiful images in 6K 3:2 FF format, which we shot in, but also can shoot up to 60p in 4K S35 mode. It's a very rugged, very stable camera. The internal ND filter wheel inside the camera is an incredible asset. Being able to cycle among 8 stops of ND in single stop increments when you are shooting magic hour, with the sun going down and needing to keep a matching exposure, is pretty incredible, especially in an environment like the one we had, flying on a Steadicam the whole time.

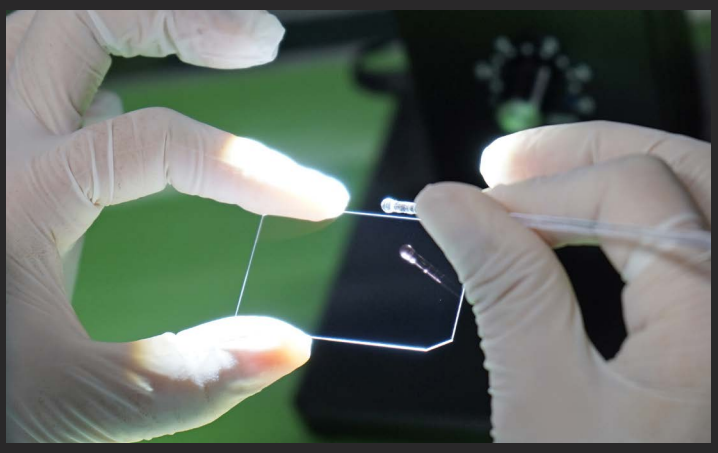
I look forward to more VENICE shoots and more VENICE capabilities as we go forward. I feel this camera marks a brave new step for Sony in the world of high-end cinema, away from the look of high-end television broadcast cameras and much further into the world of digital cinema raw image capture cameras than before.

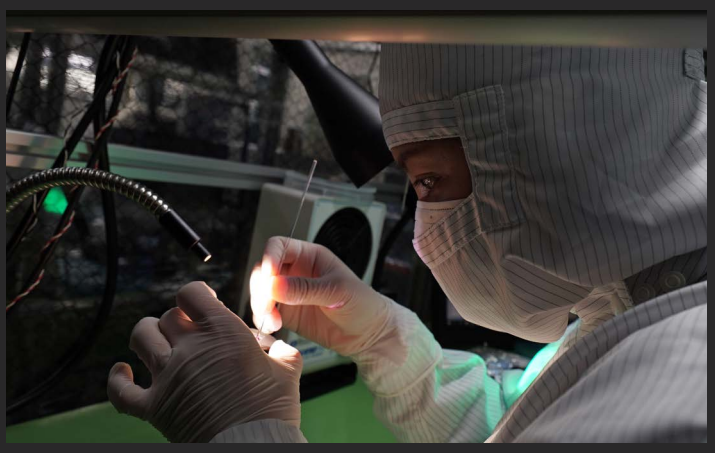
bandpro.com *sony.com/venice*
sanwa-group.com *angenieux.com* *cw-sonderoptic.com*

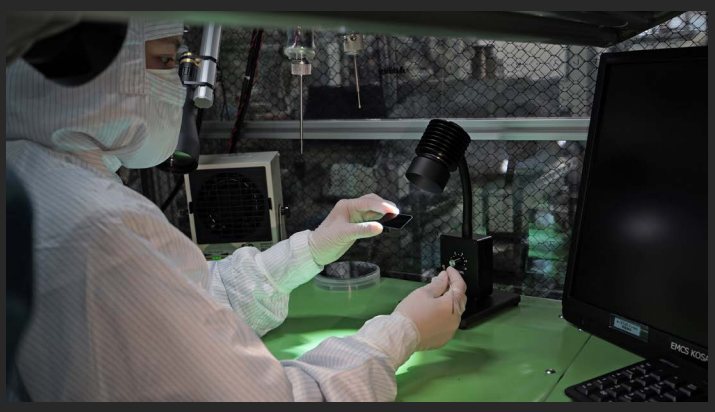
VENICE in Kosai - Sony Factory Tour

Sony VENICE cameras are assembled at the Kosai Technology Center, on the shore of Suruga Bay, with Mount Fuji towering to the West. It's 140 miles south from Tokyo Station.

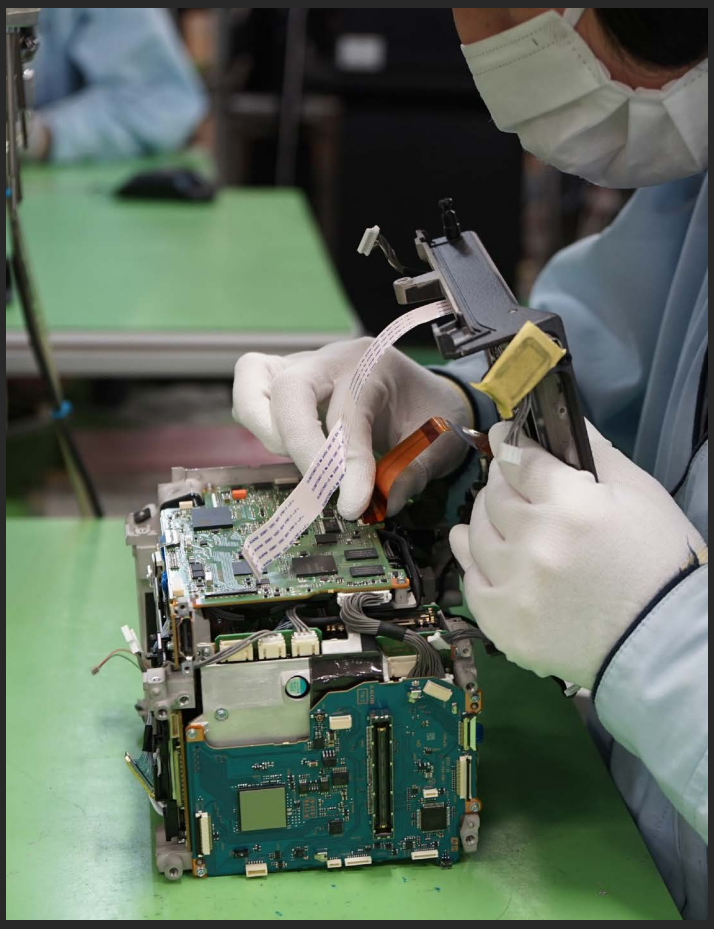
Here is a whirlwind tour of the Kosai Factory and a quick look at how VENICE is put together. It's interesting to see the engineering and craftsmanship involved in positioning the 8-step, 8-stop ND filter wheels between the sensor and the native E-mount, in a space that's less than 18mm deep.

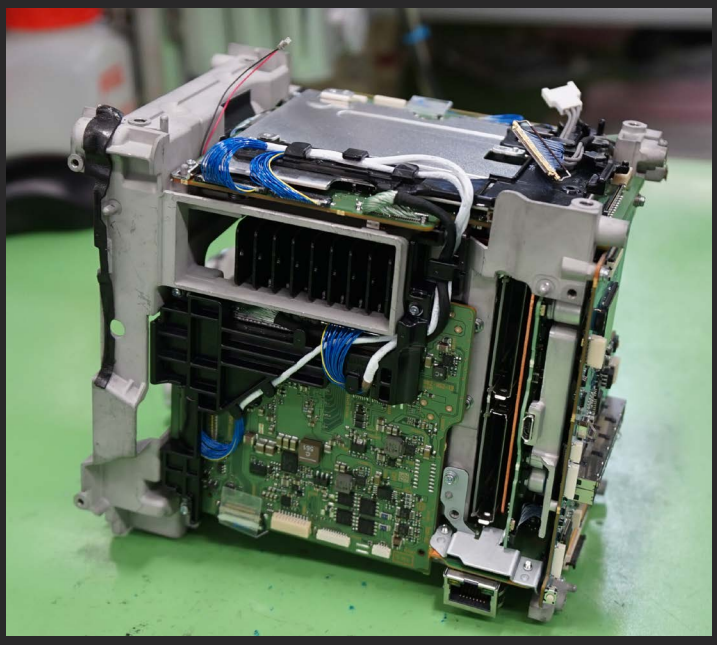




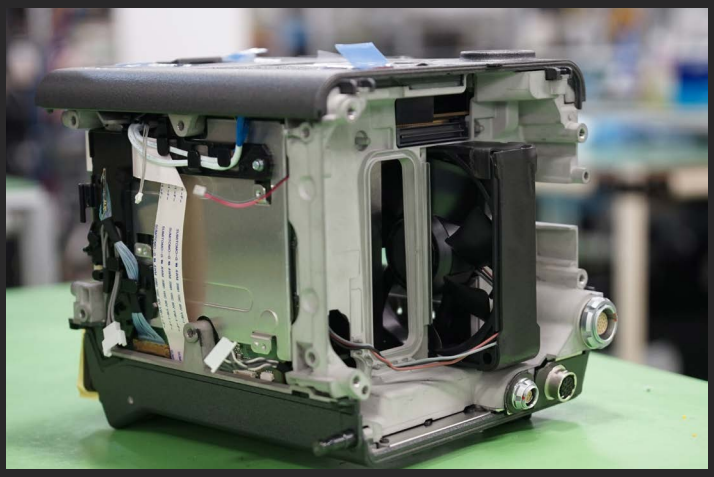


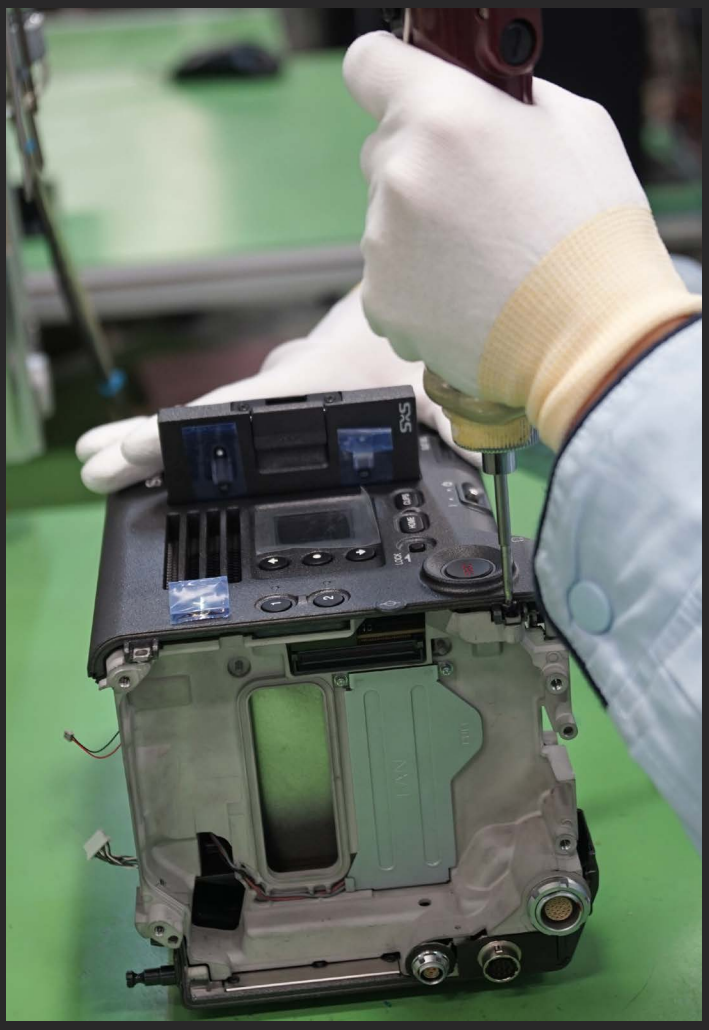
VENICE in Kosai, cont'd



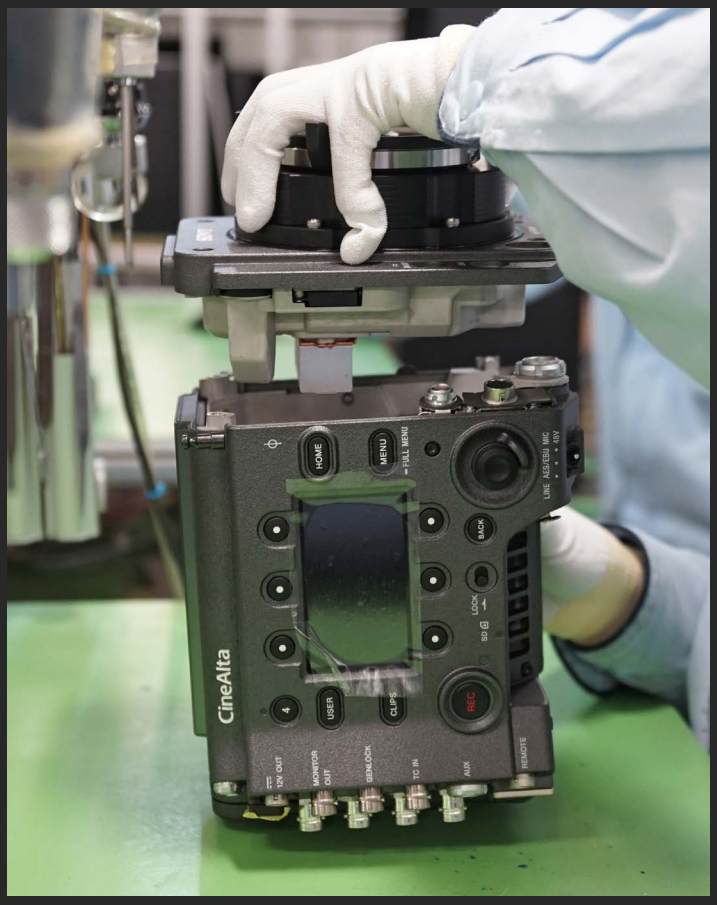


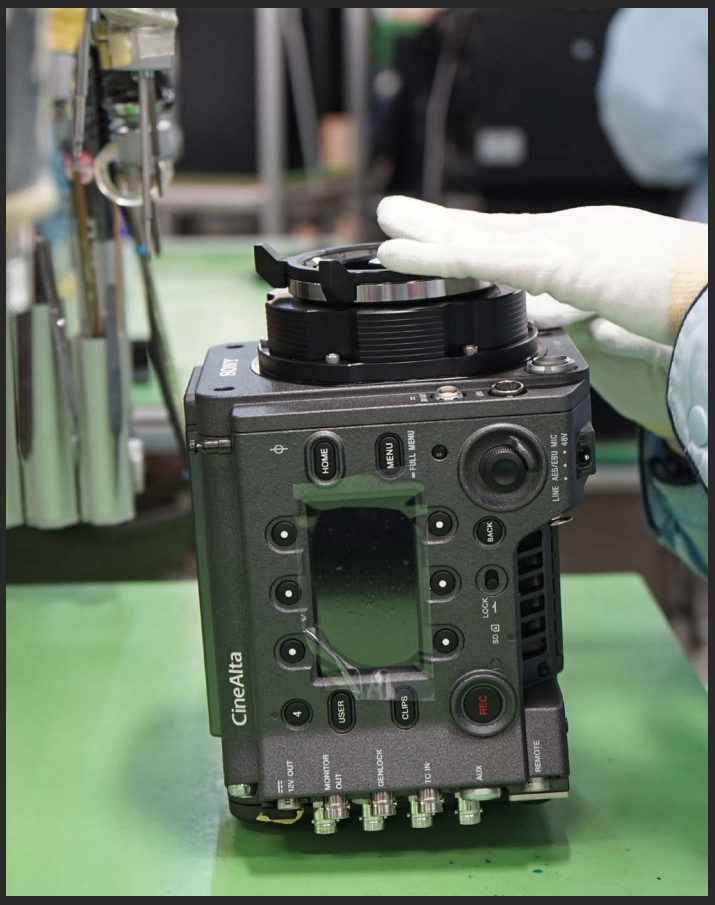
VENICE in Kosai, cont'd





VENICE in Kosai, cont'd





IB/E OPTICS adds Large Format 60mm Macro Raptor

IB/E OPTICS designs and manufactures the RAPTOR Macro Large Format Lens Series. The first three focal lengths are available in 100 mm, 150 mm and 180 mm focal lengths. The new 60mm RAPTOR Macro lens will be available this summer. The RAPTOR lenses offer large format sensor coverage (50mm Ø), 1:1 magnification and rugged cine mechanics. They have internal focusing, APO extended color correction and consistent distance from flange to iris and focus ring.

Every lens in the set has a front diameter of 95 mm and T2.9 maximum aperture. Focus and iris rings have standard M0.8 gears. The UMS PL Mount provides Nikon F, Canon EF, Sony E-mount, etc.

IB/E Optics has been building lenses, expanders and extenders for a long time: PLx1.4, PLx2, HDx1.4, HDx35, and HDx2. They custom-designed the Prime DNA Lenses, Prime 65, and Prime 65S lenses for ARRI Rental's Alexa 65, and built the Prime 65 and Prime 65S lenses in-house. *ibe-optics.com*

IB/E OPTICS Full Frame Expander

Full Format cameras and Full Format lenses are here. But what if you are an owner-operator or rental house with a vast inventory of superb Super 35mm Format lenses (24 x18 mm image area)?

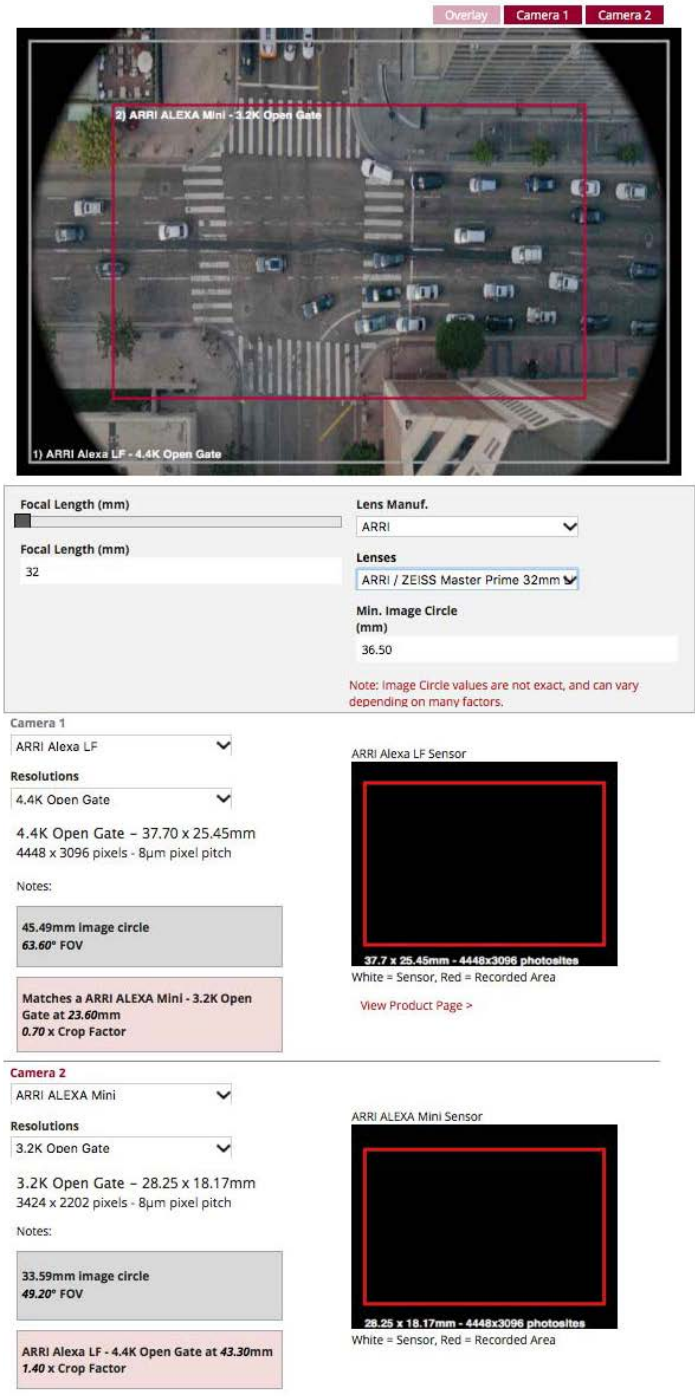
The IB/E Optics S35xFF Full Frame optical expander works with most S35 lenses to cover the new, larger sensor areas. Optical quality is excellent, with little light loss, and not much blow-up. It uses IB/E's UMS PL Mount (Universal Mount System) to accommodate all kinds of interchangeable lens mounts. The IB/E S35xFF expands the image and maintains image quality and consistent illumination, without exposure fall-off (shading) toward the edges.

The IB/E Expander covers up to 46.6 mm image diagonal. That's more than enough for all current Full Frame 36x24 mm sensors (43.3 mm diagonal). It covers the RED W8K MONSTRO sensor: 21.60 x 40.96 mm (46.3 mm Ø). And it covers the ALEXA LF sensor: 36.70 x 25.54 mm (44.71 mm Ø).

Basically, the S35xFF makes the image circle larger: from a diagonal of approximately 30 mm of your Super35 format lens to the larger diagonal of Full Format. The image is expanded by a factor of 1.45x. Light loss is about 1 stop. (IB/E Optics recommends best performance at T2.8, and a maximum aperture of T2.0)

Depth of Field stays about the same as the original Super35 format. So, if DoF of a 50 mm S35 lens was 10 inches, it remains the same 10 inches with the expander covering Full Format. Angle of View also remains roughly the same. Your 50 mm lens on a regular Alexa covers about the same angle of view as a 50mm with the S35xFF on an Alexa LF.

AbelCine FOV Calculator 2



Quick. You're shooting with an ARRI Alexa Mini (Super35) and a new Alexa LF (Large Format). The Alexa Mini is wearing a 21mm ARRI/ZEISS Master Prime. What lens do you choose to match the same field of view on the Alexa LF?

AbelCine's new Field of View FOV Calculator 2 quickly and easily answers most of these mind-numbing questions. Like:

1. What Large Format lens do we need to match the same FOV (field of view) as the 21mm on the Mini?
2. What is the Alexa LF 4.4K Open Gate image area?
3. What is the pixel pitch?
4. Will a 21mm Master Prime vignette on the Alexa LF?

Andy Shipsides and the crew at AbelCine have updated the original, popular FOV Comparator. The new AbelCine FOV Tool 2.0 is an online, real-time calculator that compares camera and lens combinations, a variety of sensor sizes, recording resolutions and aspect ratios. It includes most cameras and even more lenses. The latest full format cameras are included: Sony VENICE, ARRI ALEXA LF, and RED W8K VV MONSTRO, Anon EOS C700 FF. You can select a specific recording mode on one camera to compare with another. Then you can specify an image circle to overlay over a sample image to determine lens coverage.

The AbelCine FOV Tool 2.0 will be updated with additional cameras and lenses — including an anamorphic mode and the ability to select different images. Bookmark it: *tiny.cc/abelcine-FOV*

AbelCine Celebration

Sat, Feb 10, 2018. AbelCine celebrated the move of their NY Flagship 44,000 sq ft facility to Industry City Brooklyn with a big open house. AbelCine's new facility is larger than an acre and located on the vibrant technology campus along the shore of lower New York harbor.

There's a large, interactive sales showroom, spacious rental check-out bays, a state-of-the-art equipment service center, seminars, events and Friday "Magic Hour" gatherings. The new training theater is equipped with 4K projection and a 15-foot screen.

From top and l-r: Rich Abel, Pete Abel; lectures in 4K theater; Claudio Miranda, ASC and Pete Abel. *Photos by Mark Forman*

Tilta Nucleus-M Wireless Lens System

The Tilta Nucleus-M is a wireless lens control system with a Hand Control Unit, wireless motors with built in drive units, and two handles with built in wireless lens controls.

Power Button of
Hand Control Unit

The hand unit is a familiar focus, iris and zoom control. The motors get daisy-chained power from the camera. The hand control unit and the wireless handgrips each require two EBL 18650 3.7V 3000 mAh Li-ion rechargeable batteries (available from Amazon). Batteries not included; a charger is.

For some operators, it all comes down to the design of the handles, and these feel like a comfortable cross between a Jedi Lightsaber and a mountain bike grip. They are comfortable in a variety of positions, and come with brackets for standard rosettes and rods, for handheld or gimbal operation.

Attach the wireless handle with the zoom joystick to the rosette on the camera's right side. Attach the wireless handle with the focus/iris wheel to the camera left side, and ideally use it for iris control. Leave focus for your focus puller who should be working with the hand unit. Of course, there are many other permutations.

Connect the motors by daisy chaining them together and get power from the camera's P-Tap connector or accessory port. Power one motor on and all the others turn on as well.

Assign a separate wireless channel and separate motor channel for each motor-controller pair.

The Nucleus-M hand unit turns on by pressing the big push button with the red Tilta logo. The motors turn on, obviously, with the POWER button. Press the red REC button to power the handles. Press these buttons for 3 seconds to shut down. *tilta.com*

Right
Wireless
Handle

Displays and menus on Motor
(left) and Handgrip (right)

Jeff Lee, AbelCine
National Training
Manager

Tilta G2X Handheld Gimbal Rig

Tilta G2X and Canon EOS C200B, with roll axis stabilizer in front

Tilta G2X and Canon EOS C200B, with roll axis stabilizer at rear

Tilta G2X with Nucleus-N follow focus knob and Panasonic GH5 with 12-60 Leica Vario-Elmarit

The Tilta Gravity G2X is a handheld gimbal rig that you can hold with one hand. Those of us who are not body-builders can be helped by the dual rosettes, one on each side of the Brazilian Rosewood handle, to attach twin handgrips, various accessories such as the Nucleus-M handles, monitor bracket or power breakout boxes.

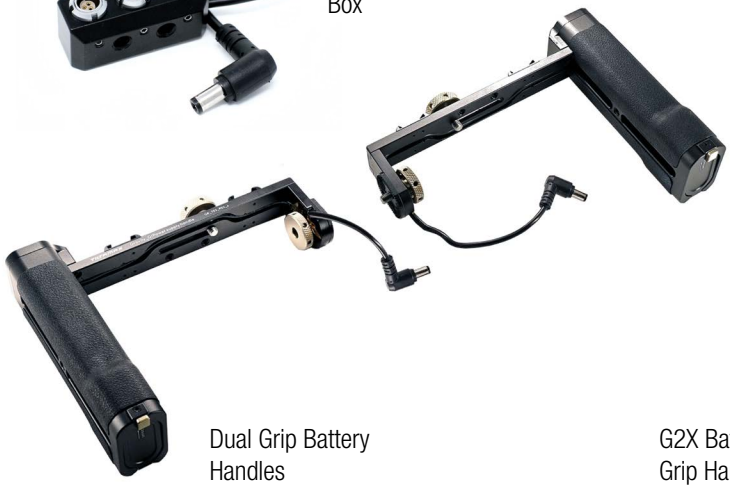
What makes the G2X so interesting is that it stabilizes camera payloads up to 8 lb. That includes DSLRs, mirrorless and cine cameras like the Canon EOS C200B.

The G2X itself weighs about 4 lb and uses 4 of the same EBL 18650 3.7V batteries as the Nucleus-M for about 10 hours of battery life. It has a 14.8 V DC connector to power the camera, accessories, a monitor, wireless lens control or video transmitter. There's also a mini USB connector for 5 V DC power.

The G2X 3-axis gimbal has various configurations for operating in standard, underslung or "flashlight" position, or rigged to a vehicle or slider. It also has 4 different operating modes: normal, tilt lock, full lock, and roll mode. The camera balances easily with an indexed sliding stage as well as a Manfrotto style sliding baseplate.

An adjustable lens support can be attached to cradle the lens, even on a rotating barrel. The G2 and G2x have been working recently on some major Hollywood shows. *tilta.com*

Lemo Breakout Box



Dual Grip Battery Handles

G2X Battery Grip Handle

Sliding Baseplate (Manfrotto style) with riser

Above: Shaping VENICE

Opposite page: Charles is holding a SHAPE Telescopic Handle and Canadian Maple Hardwood Handgrip

NEW SHAPE Top Handgrip for Sony VENICE

The new SHAPE Top Wooden Handgrip is designed with a closed handle for secure handling. It attaches to the SHAPE Sony VENICE Top Plate for rig and tripod configurations. It has an ergonomic wooden grip. 19 mm and 15 mm removable rod clamps can be mounted in parallel or perpendicular orientations on both ends of the Cheese Rail. They can be attached in three different positions on top of the handle. Also, the Handgrip is screwed on the Top Plate using 1/4-20 UNC socket-head cap screws and can be removed from the Top Plate using the Hex Key included.

NEW SHAPE Top Plate for Sony VENICE

The rugged, CNC-machined aluminum Top Plate is designed to support and facilitate handling of the Sony VENICE Camera. It is secured on top of the camera using four 1/4-20 UNC socket-head cap screws. The Top Plate offers an array of 3/8-16 UNC threaded mounting holes on top and on both sides. ARRI-style anti-rotating locating holes are available to prevent your accessories from loosening onto the Top Plate and Top Rail. Two Velcro strap attachment slots are available for cable wrangling.

The SHAPE Top Plate also works with the original Sony VENICE handle and can be placed further forward for better balance. The 15mm Top Plate Rods allow you to mount the original Sony viewfinder and bracket. It is equipped with a 15mm rod clamp and removable 19mm rod clamps that can be mounted at the front of the Top Plate, allowing easy positioning of 15mm and 19mm rods to set the accessories at the proper height with respect to the Sony VENICE camera optical center.

In addition, the original Sony VENICE Camera Top Handle can be used with the SHAPE Sony VENICE Top Plate. The SHAPE Top Plate comes with a tool box and magnetic Hex Key, which are useful for adjusting and installing the Top Plate onto the camera.
shapewlb.com

Top Handgrip for VENICE

SHAPE Top Plate for VENICE

SHAPE Sliding Riser and Locking Lever

SHAPE 15mm and 19mm Bridgeplates

SHAPE Lightweight ARRI standard Dovetail Plate

Mylène Girard and Charles Vallières—About SHAPE

Mylène Girard and Charles Vallières, couple and co-founders of SHAPE wlb Inc, were both working in the film industry for more than 15 years before launching the company. Mylène was working as a camera assistant and Charles was an art department supervisor, building sets and doing special effects at various film studios.

SHAPE was founded in 2007 when necessity became the mother of invention. Cinematographer Jean-Claude Labrecque encountered a problem while shooting the documentary *À hauteur d'homme*. Following Bernard Landry, Premier of Quebec, during the 2003 electoral campaign, the crew was shooting with a small video camera. Although it had great video capabilities, the camera needed better stabilization and support for professional results and comfortable all-day shooting.

Mylène and Charles took a few days off from their jobs to build a shoulder-mount system in their Montreal studio apartment. It was a new kind of camera support, capable of converting a DSLR into a useful cinema production rig. In their early 30's at the time, they built a prototype using plumbing supplies and parts mostly from a local hardware store. The director and crew tried it on location and were very pleased with the stability and comfort of the rig.

Word spread quickly in the industry. Soon, others began to notice SHAPE's camera rigs on sets and wanted one for themselves. So, Mylène and Charles started a cottage industry in a backyard tool shed and later in their basement. To meet the increasing demand for their new camera rigs, the two entrepreneurs officially launched SHAPE wlb Inc. in October 2007. The name SHAPE stands for SHOULDER HANDLE ADJUSTABLE PORTABLE EQUIPMENT and "wlb" is derived from their three children's initials, William, Léa and Bianca.

By October 2008, SHAPE was filling as many orders in one month as in the previous year. The brand became popular with prosumers who were looking for more affordable, professional camera rigs and accessories. That was the beginning of the adventure.

Charles said, "Next, we designed and built the world's first and only adjustable Quick Handle Push-Button Technology patented worldwide. It revolutionized the camera stabilizer and support industry." The now-famous red push-button was introduced at the NAB Show in Las Vegas in 2009. The Push-Button Handle System enabled quick and easy 360° rotational adjustments.

Over the course of the next 10 years, SHAPE expanded its product line ranging from top-quality accessories for Canon, Sony, Panasonic, ARRI, RED and Blackmagic cameras to several sophisticated camera rig and shoulder mount designs.

In 2017, SHAPE opened a new, state-of-the-art, 15,000 sq. ft. factory, production plant and office building in Chambly, Quebec, Canada. The privately-owned company that grew from a shed to basement to tiny office block became a major player in the design and manufacture of high-end and innovative camera equipment. SHAPE is now a multinational corporation with an international distribution network covering 150 countries throughout the world.

Mylène explained, "SHAPE invests in R&D each year to create equipment that meets customers' demands—because on set and location, every second counts. Every detail matters and only the best is good enough for SHAPE's valued customers."

SHAPE celebrates its 10th anniversary this year. All of SHAPE's products are made in Canada.

Mylène said, "SHAPE believes in infinite possibilities to build better camera equipment and accessories. Our goal is to provide users with durable and high-performance equipment as well as quick and easy systems that make their work easier."

Charles said, "Across every continent, SHAPE's camera rigs are used to tell a story, and that story never ends. We're SHAPING cameras, one camera system at a time." *shapewlb.com*

If you are not one of the 20,000+ users of Johan Hellsten's Swedish Easyrig, here is a quick review.

It is a back-saving, camera weight reliever for any kind of production, from features to docs. It takes the strain off your handheld and shoulder-resting shots. Here's an extremely good example.

Fire Chasers

by Steven Holleran

Fire Chasers is a docu-series, executive produced by Leonardo DiCaprio, about wildfires in California. It follows members of Cal Fire and the Los Angeles County Fire Department as they battle the blazes that threaten wildlife, natural terrain and potentially thousands of homes. The show also highlights new recruits who are training to join the force and artists who document the apocalyptic-looking damage in photos. The cinematography of *Fire Chasers* was designed around the idea of immersion. This meant I needed all my cameras to be up close and personal whether it was a fire or a character we were following. We were embedded

on the front lines with CalFire for 15 weeks. Each type of shooting condition required a different type of gear prep to make sure we were safe and ready to roll at a moments notice.

To capture this world of wildland fire fighting my approach was simple: cinematically immerse our cameras, and the viewers, into the heart of the action in novel ways. To capture the real story, it was clear I needed to get the cameras as close to the fire fronts as possible, and shoot in a way that felt less documentary, and more narrative. I wanted the images to overwhelm the viewer. This meant getting close with wider angle, Large Format lenses and avoiding telephoto zooms. In order to communicate the tragic destruction so many people face when losing their homes, I used a Movi to capture scenes of aftermath with an almost ghost-like quality.

The first rule of operation: be within speaking distance of a firefighter. In addition, any fire action and aftermath footage would be shot in Large Format to lend scope and gravitas to the insane visuals we were witnessing firsthand. Shooting multi-camera handheld also meant coordination in the field. Using Easyrigs and Serene Arms we practiced what would become a ballet of instantaneous over the shoulders, wides, and close-ups to capture each moment in a scene.

The main challenge was mobility. Never knowing where the next fire might happen, we were always on standby. It all depended on the fire conditions. Getting to location was extremely difficult, driving past downed power lines, or up miles of winding dirt roads. We outfitted a Sprinter van and two Suburbans with all our equipment. In addition to the Easyrigs, we had a pre-rigged Movi and an Anti-Gravity Rig body-mounted jib system, available at a moment's notice.

We worked with the Easyrig Vario 5. Shooting fire in the backcountry means you have to be mobile and adaptive while enduring strenuous hikes and intense weather conditions. The Vario 5 from Easyrig allowed us to support our cinema cameras for hours at a time on extreme hikes and move at a moment's notice.

Fire-fighters are exceptionally skilled at getting ready quickly. We learned quickly what that entailed. Before even thinking about strapping on a camera, we had to suit up for fire conditions. This began with a base layer of all-cotton full-length underwear. Af-

Easyrig on *Fire Chasers,* cont'd

ter putting on massive fire boots, gloves, face mask, helmet, and goggles, we needed to find space for an emergency fire shelter in a breadbasket-sized box. We strapped these to our Easyrigs as emergency shelters to survive 2000+ degree flames that were outrunnable. Added to this weight were 2 liters of water, half a day's rations, walkie-talkie, and a Sat phone. Only then could one consider picking up a camera and riding an engine to the fire front. When completely suited up, I estimate we were wearing nearly 65-70 pounds of equipment in addition to a few extra pounds of mental baggage, including well-placed fear of what was to come.

Our next challenge: the physical shooting conditions. Boiling temperatures north of 130 degrees were common, as was wafting dirt and ash, noxious smoke, and aerosolized poison oak. Each day, we spent hours cleaning the cameras with high-pressure air nozzles blowing chunks of wood and ash out of the camera fans and lenses. At times, the dirt and ash was so bad that we worked with rotating Pola ND filters from Tiffen in an attempt to avoid switching filters in the field.

Weight quickly became a massive issue, so we stripped every non-essential part off the cameras, from matte boxes to battery plates. To avoid carrying batteries on the cameras, it became common for us to carry them in our Easyrig side pockets. Dehydration, sun stroke, and exhaustion were constant threats on the long backcountry hikes which were commonplace. Conditions that included exploding propane, swirling 100 ft. firestorms, invisible fire pits, 10-ton retardant drops and some of the most explosive fire conditions in a generation made *Fire Chasers* a dangerous and dynamic environment for filmmaking.

Credits

Cinematographer: Steven Holleran

Photographer: Gary Plummer

Production companies: Netflix, Appian Way, Stone Village, Original Productions.

Equipment: 4 Panavised RED Dragon Cameras in 6K with Panavision Primo 70 Series 14mm Prime and 20-80mm Zoom, and in 5K mode with Angenieux Optimo 15-40mm and 45-120mm Zooms. Cinema Devices Anti-Gravity Cam, Freefly Movi, Easyrigs. We shot natively spherical 2:35:1 for the required 4K finish.

steveholleran.com

Easyrig at NAB

Easyrig Umbrella with Holder

Not everyone is chasing fires with an Easyrig and almost everyone winds up shooting in the rain. Here's a new umbrella and bracket that you can mount to the upper arm of the Easyrig. With this new invention, you will be protected from not only rain but also from the sun, since the umbrella will offer portable shade. This also reduces glare on your LCD monitor.

You can also use the bracket to attach a battery or accessory, because the Umbrella Holder comes with two threaded holes (1/4" and 3/8"). It is possible to attach a light fixture stud as well.

Easyrig Line Guide for Serene

Flowcine's Serene attaches to the top of an Easyrig to reduce vibration and bumps. But, there was one challenge. Since Serene was intended to position the camera out front, often with a gimbal rig, it was sometimes difficult to pull back on the Easyrig's camera support line for shoulder-resting. Now you can to shoot from the shoulder as easily as from the hip or handheld or with a rig. Easyrig's new Line Guide for Serene nicely positions the camera back towards your shoulder.

Whenever you want to re-position your camera from forward to rear for shoulder-resting, simply guide the line through the pulley of the Easyrig Line Guide.

easyrig.com 16x9inc.com

Cave Diving for Red Bull with Max Skrein

Maximilian Skrein was Director/Cameraman on a lyrical Red Bull Underwater Cave Diving Ballet using Sony α7R II cameras.

JON FAUER: How did your Red Bull Underwater Cave Diving Production begin?

MAX SKREIN: "I love to shoot in crazy locations. I got to know the Chief Innovation Officer of Red Bull Media House. He and I share the same water sports passions for diving and wakeboarding. We came up with the idea of doing a production about "Acrobatic Free Diving in the Caves of Tulum" and I was on a plane heading to Tulum, Mexico.

Mexico's Yucatan peninsula has the largest underground caves in the world. They are called "Cenotes," deep sinkholes formed around 18,000 years ago.

The concept?

We wanted the free diving with acrobatic stunts to look like flying through space, nothing like the world we know, where 2 humans meet and perform a show with their bodies. Something like *Avatar*, but in a natural, real-life environment.

Cameras?

We used Sony α7R II cameras. At the time, they were the smallest and had the highest sensitivity. We had 3 cameras and 3 housings in order to continue shooting even when a battery ran down or the memory card was full. We rented Nauticam NA-A7 II Underwater Housings with 180mm Domes from Hydroflex.

Lenses?

We had Leica Summilux M 21mm f/1.4 Still Photography lenses with M to E-mount adapters.

We also worked with Sony EF 16-35mm f/2.8 GM (G-Master) zooms. Underwater, everything is magnified, so this wide range was all that we needed. It also worked great for our close-ups.

Focus?

Autofocus was one of my favorite features with the Sony zooms. The Sony α7R II has a hybrid autofocus system that can track the focus of the subjects. It worked very well underwater. The Focus Peaking helped me to confirm that everything is in focus.

ISO and White Balance?

We kept the ISO between 10,000 - 12,000 depending on where in the cave the scene took place. White Balance was on AUTO, since we were working with a mixture of daylight and tungsten light.

Overheating?

Great question, Jon. We did not have any overheating issues with the Sony cameras. I know that bigger cameras can sometimes overheat in underwater housings — which can sometimes be helped by adding dry ice inside. But we were fine.

Size of camera, weight and maneuverability?

The size of the Sony α7R II camera together with the Nauticam NA-A7 housing made for a very light and easy to maneuver package. It was easy to operate, even in some of the tight confines of the cave.

Prep, scouting, outfitting?

I scouted several caves in the area of Tulum until we came across one that was a huge "room." It was the size of two football fields with massive stalactites hanging from the ceilings. Each corner looked different. It was perfect since we could use it almost as if it

Max Skrein at Hollywood Camera in Studio City, prepping Sony a7R III cameras. Photos by Dan Warner.

were a motion picture stage. We could shoot scene after scene in each corner of the cave. By pre-lighting the entire space, we only needed to make small adjustments for each setup.

Lighting?

You can imagine that lighting up a pitch-dark cave takes a lot of lights. We used powerful Big Blue Underwater Dive Lights with outputs ranging from 600 to 6,000 Lumens. Big Blue high intensity spot lights created our beams of artificial sun or back light.

Style?

I always tried to keep the camera moving. Underwater, the camera acts like it is weightless, floating through the scene, shooting from any angle with ease. My Scuba tank and lungs worked like a crane: when breathing in, you and the camera move up. Exhale and you submerge. It is very peaceful.

What comes next?

The future looks pretty bright. I am thrilled to be shooting the next project with the Sony α7R III since the low light sensitivity and autofocus are twice as good as the α7R II. Especially important is low light sensitivity when you shoot in such deep water or caves.

I am very fortunate to be working with Red Bull in the future. We are planning on an underwater production in Hawaii, having free divers dive The Lava Stream on the Big Island. Furthermore, Skrein Films is working closely together with Red Bull's Innovation Team to come up with new creative ideas. I am also producing and directing Commercials in Europe and the USA.

Neal Manowitz, VP of Sony Digital Imaging, commented, "Max now has the tough decision to choose between a7R III and the new a7 III for his next project. Choice is good."

Credits.

Production Company: Skrein Films
Client: Red Bull Media House
Divers: Daniel Koval , Kristin Kuba,
Director/DP: Max Skrein
UPM: Tizian Gruner
1st AC: Leo Camarillo
2nd AC: Brian Campeau
BTS: Chiara Salomoni
2nd Unit DP: Marty O'Ferrell
Safety Diving Team: Xibalba Dive Center

P+S Technik Full Format and S35 Anamorphics, LensChecker

CS 1.5x Full Format Anamorphic Zooms and Primes

35-70mm T3.2
CS 1.5x
Anamorphic Zoom

P+S Technik's CS (as in CinemaScope) 1.5x Anamorphic lenses arrive at a fortuitous moment in time. Almost every camera manufacturer has, by now, introduced a Full Format camera and almost every cinematographer has been asking about how to fill that larger sensor with anamorphic images.

There are 2 zooms and 5 primes planned in the P+S Technik CS 1.5x Anamorphic set. They come in PL and IMS (Interchangeable Mount System). Front diameter is 114mm across the set. Large Format Image circle specifications in mm will be announced.

- 35-70mm T3.2 CS 1.5x Anamorphic Zoom.
- 70-200 T3.5 CS 1.5x Anamorphic Zoom.
- 40, 50, 75, 100 and 135mm CS 1.5x Anamorphic Primes.

50mm T2.5 CS
1.5x Anamorphic
Prime

LensChecker

We have praised the P+S LensChecker often before. At 3.5kg, it is light, small and essential for all who stake their reputation on the lenses they use. The LensChecker has an IMS lens mount system available with almost any mount imaginable and covers image circles beyond Full Format and up to 8-perf. Developed by Kish Sadhvani of StarKISH, it is manufactured in Ottobrunn by P+S Technik.

Evolution 2x S35 Kowa-Look Anamorphic Primes

KOWA. Say this four-letter word and cinematographers become sentimental poets of haiku. "Digital cine / Loving anamorphic flares / Kowa vintage look."

Kowa Cine Prominars are Japanese 2x Anamorphic Super35 lenses from the 1960s. Low in contrast and warm in color, they flare easily. The flare is warm rather than the common anamorphic blue. They are small in size and very light, with a front anamorphic cylinder. The original Kowa Anamorphic prime lenses were produced until the 1970s and four different focal lengths were available: 40mm T2.3, 50mm T2.3, 75mm T2.8 and 100mm T3.4.

Not made since the 1970s, good Kowas are difficult to find outside the best rental houses. Their delicate mechanics tended to wear out. The best have been rehoused, many by P+S Technik. But, because of popularity on rigs and drones, their numbers are dwindling after too many hard encounters with stationary obstacles.

Enter P+S Technik once again to the rescue. The P+S Technik Evolution 2x lenses are based on the original optical design and front anamorphic elements of the Kowa Anamorphics. The mechanical design comes from P+S Technik's own experience rehousing these lenses.

Since September 2017, P+S Technik has delivered more than 100 Evolution 2x anamorphic lenses. Production has ramped up to fulfill demand. Two additional focal lengths, matching in look, have been added: 100mm T3.2 and 135mm T3.X (maximum aperture TBD). The Evolution 2x 135mm lens should be ready to deliver in mid 2018.

P+S Technik builds the Evolution 2x lenses with a compact, lightweight housing and modern, cam-driven, internal focus mechanisms. Lens barrel rotation has been improved significantly compared to the originals: 200° for focus and 100° for aperture. M 0.8 gear rings are in the same position throughout the set. The front diameter is 80mm with a 77mm thread for screw-in filters. Evolution 2X lenses come with IMS—Interchangeable Lens Mount System, with PL as standard. Optional mounts include EF, E-mount, MFT and probably more to come.

The look and bokeh of the Evolution 2x lenses match the look of original Kowa Anamorphic lenses. If you are lucky enough to have your own Kowas, individual Evolution 2x primes can be ordered to complete your set.

P+S Technik Evolution 2x anamorphic lenses are excellent choices for handheld, Steadicam, rig or drone camera work—adding the legendary Kowa look. *pstechnik.de*

Cartoni at NAB 2018

Cartoni Focus 22 Flat / 150mm Ball Base

CARTONI introduces several innovative additions to its product line at NAB 2018 (Central Hall, booth C9020). The new fluid heads, tripods, pedestals and remote devices address requests from rental houses and independent camera operators for versatile supports to meet new and emerging production demands.

Following the success of the 100mm base presented last year, new products include a new 75mm base SDS (Smart Deployment Series) tripod and spreader support system for ultra-lightweight cameras. It combines Cartoni's FOCUS 8 fluid head as a new version of its SDS, featuring a Smart Stop two stage/single lever tripod and Smart Lock mid-level spreader technology. Available in aluminum and carbon fiber, the SDS system is super fast to spread and collapse, making it a great choice for documentaries, ENG and other run-and-gun camera work. The 75mm SDS system is also available for separate purchase.

The FOCUS 8 fluid head is suitable for payloads from 0 to 8kg (17.7 lb), and features a continuously variable fluid damping system on pan and tilt movements and Cartoni's patented variable counterbalance.

Many operators asked for an upgraded version of the FOCUS 22 having both Flat and 150mm bowl. The new head's dual design works with most tripods, dollies, hi-hats, pedestals and sliders. It is a wonderful time-saver for rental houses and productions that work with a variety of camera and support systems. The new base attaches directly to 150mm tripods and to Pedestals via 4 bolts. The tie down shaft can be easily removed with 10mm wrench from the 3/8" thread and then will attach directly to baseplates and sliders. FOCUS 22 now has a super wide range of applications, supporting cameras from 3 to 22 kg (49 lb) with the patented Cartoni perfect wing counterbalance.

The new E-CUBE 7 is an encoded pan and tilt head with 7 steps of drag in both pan and tilt. This fluid head acts as a sophisticated pan bar when connected to a remote head, and works as a remote control for cameras on cranes, jibs and drones. It features high resolution encoders with accuracy at 40.000 c/t. E-CUBE 7 comes with flat Mitchell base and optional 150mm adapter.

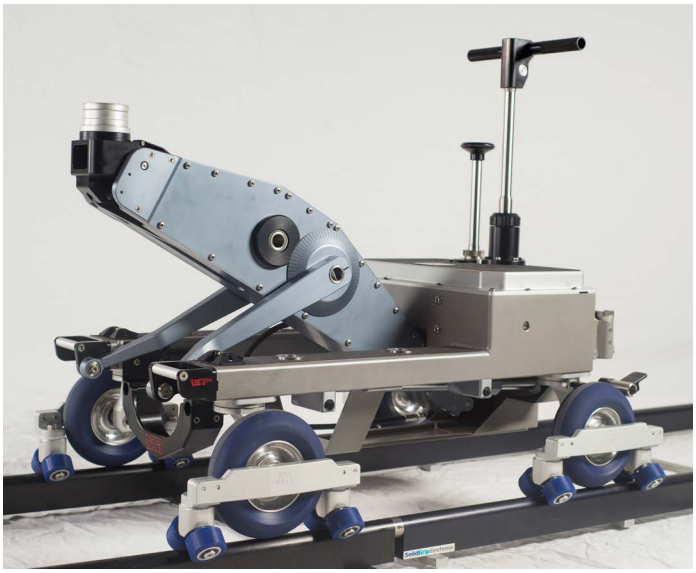
The standard E-Cube 7 (100mm base and continuous pan and tilt drag) can be supplied in 3 different versions: with Cartoni electronics to operate the Cartoni E-REM 25, with encoders only (transmitting position data to any OEM electronics) or as a barebones Fluid Head accepting different encoders and electronics in total OEM configuration.

The E-REM 25 newest release showcases an extremely smooth, reliable, silent, remote pan and tilt head with no backlash. The maximum payload of 25 kg (56 lb) covers almost all camera/lens configurations on dollies, towers, cranes or pedestals. A wide variety of speed options from minimum 0.12 rpm and 0.7 °/sec to maximum 120 rpm and 720°/sec give this head outstanding flexibility. Pan/tilt resolution is 800.000 c/t. It interfaces with a variety of remote control options, such as the E-CUBE, Joystick or hand wheels. The Data transmission works on RS232/CAN protocol; Zoom and Focus control for digital lenses complete the setup.

Cartoni camera support products are available in the United States through Manios Digital & Film.

maniosdigital.com *cartoni.com*

Cinetech Italiana



The professional Dolly series by Cinetech Italiana have been fully redesigned. They are seen on grip packages in 39 countries around the world. The dollies are known for their precise moves and extreme ruggedness. Cinetech is also know for its efficient customer service. CAPINERA is a lightweight, compact dolly. It weighs a mere 187 lb / 85kg but has the stability of much larger and heavier dollies.

SUPER FALCON II has an articulating arm with electronically repeatable and programmable starts/stops and intermediate marks. The lift mechanism is hydraulic, but the actuation is electronic. (131 lb / 60kg max load).

SUPER HAWK II is a high performance dolly with crab, round and conventional steering. It has the heaviest payload capacity (175 lb / 80kg max).

Armando Grottesi, owner and president of Cinetech Italiana, has extensive experience building dollies that goes back to 1983. For 35 years, he's improved the design of his products, constantly researching and searching for new, high-performance materials.

The entire Cinetech Italiana product line is designed and manufactured in his Rome factory, not far from the famous Cinecittà Studios. It looks like a custom Formula One shop, with aluminum and stainless steel fabrication, and special dolly wheels.

The search for dolly wheels led Armando to northern Italy where he discovered a polyurethane factory. He engineered and developed, with his polyurethane specialist Gustavo, a new high-performance bi-component polyurethane dolly wheel.

These new bi-component wheels are one of the updates featured on the redesigned dollies. The inner rim has a 90 Shore hardness providing superior rotation on tracks, with greater stability and smoothness. The outer rim has 70 Shore hardness for improved steering and traction on any surface. In other words, track and trackless wheels.

This innovation means more elasticity and resistance to crushing, a concept aimed at eliminating traditional pneumatic wheel challenges that frequently do not maintain a proper inflation pressure and consequently stress the entire dolly structure.

Cinetech not only exports to China but has opened an assembly line in Beijing with a service station to satisfy the great demand of the local film industry.

Available worldwide from Cinetech Italiana Srl *(cinetech.it)* and in North America from BandPro *(bandpro.com)*.
At NAB booth C10618.

Gecko Cam News

Gecko Cam has moved to a large, new facility at Herrmann Oberth Strasse 16 in Putzbrunn, about 25 minutes southeast from the center of Munich. *gecko-cam.com*

Gecko Cam makes an electric turntable for lens technicians.

Gecko Cam Genesis G35 Full Frame Lenses come in focal lengths of 14.5mm T3.0, 16mm T2.5, 20mm T1.8, 25mm T1.4, 35mm T1.4, 50mm T1.4, 85mm T1.4 and 135mm T2.0.

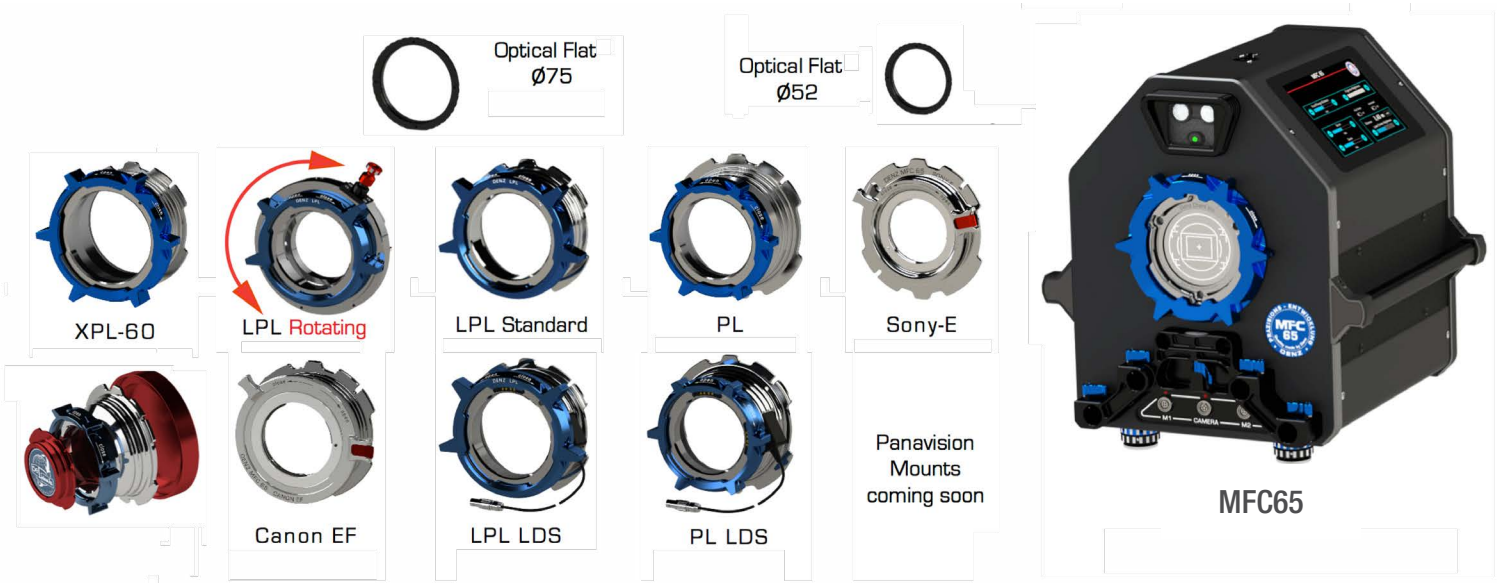
- Image Circle is 46.3 mm
- Changeable Focus Rings for Metric and Imperial
- Optional Motor for Focus & Iris
- Gear rings at the same position. Dustproof barrels.
- 114mm front diameters
- Choice of coated or uncoated front elements
- PL, EF, E, F, MFT Mounts

The new Gecko Cam Large Format test projector covers image circles up to 60mm diameter. A newly designed condenser lens results in approximately twice the light output. The reticle test pattern can be adjusted by remote control. A large, rugged breech-lock (similar in principle to the PL, but larger) works with the IMS Interchangable Mount System including PL LPL, XPL, Canon EF, Nikon E, Sony E-mount and Leica R.

Above, Gecko Cam Managing Director Heinz Ratzinger at Micro Salon in Paris.

At left, Gecko Cam ZEISS SuperSpeed Rehousing. In response to the large interest in vintage lenses with modern mechanics, Gecko cam has developed lightweight and rugged rehousing for the popular ZEISS SuperSpeed lenses. The 80mm front diameter and weight remain the same.

DENZ MFC65 Multi Format Lens Projector



The Denz MFC65 Multi Format Lens Checker is a future-proof must-have projector for the new Large Format digital age of film.

The MFC65 is a high-performance lens test projector for equipment manufacturers and rental houses who, in many cases, require 24/7 operation. Using a high-intensity COB-LED light source, the test chart is illuminated evenly and the projected image can achieve brightness levels of up to 20,000 lumens. The light source intensity can be adjusted/dimmed steplessly. Cooling is done by an innovative MFC65 two-chamber cooling system with continuous temperature monitoring. This cooling system is not only effective but is also quiet for pleasant working conditions even in smaller spaces. Perhaps you can hear the ticking of a clock on the wall.

The test chart cartridge is swappable and thermally isolated. It is mounted with screws to a rigid, motor-driven stage with an integrated measuring system to achieve positioning accuracy of 2µm.

The Denz Basic Lens Mount (DB-Mount) uses a breech-lock system with a mating diameter of 87mm and a very short basic flange depth of 10mm. It accepts a multitude of adapters for all lens mounts in use and assures a future-proof system for almost any mount that may arrive.

The MFC65 has been designed for use with the heaviest cine zoom lenses. A tandem support system on the front of the MFC65 offers Ø15mm lightweight and Ø19mm studio rod sockets. The MFC65 also has an additional set of rod ports and an accessory trapezoidal bridge for extra-rigid support when using heavy lenses.

Operation of the MFC65 is intuitive and controlled by an integrated touchscreen. The software runs under LINUX.

The accessory inventory for the MFC65 includes:

- Two lens motors that can be added and connected to the integrated LEMO ports to drive focus and zoom as desired.
- A remote WiFi tablet reproducing all display information and operational capabilities of the projector's integrated touchscreen.
- An orientable witness mark camera with an integrated gooseneck mount. The image can be seen both on the integrated touchscreen and the remote tablet, allowing for efficient operation by a technician working alone or wanting to move closer to the projected image.

The MFC65 is designed for setups both in conventional lens test rooms and on location (a camera truck or equipment room). All elements necessary for setting up the MTC65 are included: a positioning laser for alignment to the projection surface, a continuous-readout distance measuring unit aligned to the picture target plane, and an electronic bubble level for precise levelling of the projector using three adjustable and lockable feet.

The alignment positioning laser can also be used as a reference to judge breathing and identify image-shift issues when focusing.

The Denz MFC65 test chart has inscribed formats for 1", MFT, APS-C, Super35, RED Helium, Full Frame, PV, DXL, Alexa 65, and standard medium format (48.00 x 36.00 mm). In addition to frame corners, selected formats are framed with continuous scribe lines for evaluation of barrel/pincushion distortion.

Numerous Siemens stars and line-pair blocks running from 12 to 200 LP/mm allow for evaluation of resolution. For anamorphic lenses, there are also Siemens stars with 2:1 squeeze. For zoom tracking evaluation, there is a center cross with scribe scaling. Evaluation of coverage can be performed easily using the inscribed image circles. A ruler with marks spaced at 1mm increments can assist in determining actual coverage.

After 6 months of testing and customer feedback, the Denz MFC65 Large Format Lens Projector is in production and shipping now.
denz-deniz.com

Denz PLC — an essential Portable Lens Projector and testing device camera assistants and smaller rental houses, and a helpful companion to the MFC65. Shown here with new LPL Mount.

Vocas on VENICE

Dovetail adapter plate

Quick release dovetail plate

USBP 15 Mk II

Baseplate BP-18 MkII

Vocas has new accessories for Sony VENICE.

Top handgrip Pro kit for Sony VENICE

The Top handgrip Pro kit is designed with a closed handle. This gives the user extra grip, even when wearing gloves. It can be placed more forward than the original Sony handle for a better balance. The separate 19 mm viewfinder adapter for top handgrip allows the user to mount the original Sony viewfinder and bracket.

Dovetail adapter plate for Sony VENICE

When using the Dovetail adapter plate, the Sony VENICE can be part of the Vocas Sliding System. This adapter plate fits the Quick release dovetail plate, USBP-15 and Base plate BP-19.

Quick release dovetail spacer for Sony VENICE

For 19 mm base plates, Vocas has a Quick release dovetail spacer. The new Vocas Dovetail adapter plate fits the quick release dovetail spacer and this spacer is compatible with the BP-18 and BP-8.

MFC-6 kit 1:2

The new Vocas studio follow focus MFC-6 has a self-adjusting drive arm. By simply pulling the drive arm backwards and then releasing it, the drive arm will return to the lens and exert the correct pressure to the lens.

MFC-6 follow focus kits are available with gear ratios of 1: 1 and ratio 1:2. The kits include the MFC-6 gear box 15 mm, 2x MFC-2 / 6 knob standard, MFC-6 driver arm 1:1 or MFC-6 drive arm 1:2 and MFC-2 / 6 drive gear M0.8/40T.

Matte box kit MB-623

The MB-600 matte box system is the biggest Vocas matte box currently available. It has exchangeable rotatable filter holders, a single filter and a double filter holder. A swing away and a regular bracket are both available for this 6.6”x 6.6” matte box. It includes externally operated patented eyebrows. Complete kits are available.

Vocas products are now available worldwide in their new webshop. *vocas.com*

DMG Lumiere by Rosco

DMG Lumière's Jean de Montgrand, Nicolas Goerg, Mathieu and Nils de Montgrand with Rosco Chairman Stan Miller in the middle.

Rosco acquired DMG Lumière in September. It's business as usual, with DMG Lumière continuing to develop LED lighting products and Rosco providing international sales, marketing, distribution and customer service.

DMG Lumière was founded by brothers Mathieu, Nils and Jean de Montgrand, and their partner Nicolas Goerg. Combining their talents—cinematographer, LED lighting developer, gaffer—they started their company in Lyon, France in 2014. DMG Lumière grew quickly.

"DMG Lumière is the perfect partner as we look to grow our business, and we're delighted to welcome them into the Rosco family," said Rosco CEO Mark Engel. "We share similar values in terms of a dedication to innovation and a passion for encouraging our customers' creativity. The chemistry between the two businesses was evident as soon as we met, and by combining our expertise, vision and technology, we will be able to offer our customers a wider, specialized range of LED lighting."

DMG Lumière's General Manager Nils de Montgrand said, "This is a very proud moment for our business, and it gives us a great opportunity to move forward quickly and further develop the advantages that our LED technology can bring to lighting film and television sets. Rosco has been a world leader in color and lighting for more than a century, and we have total admiration for its history, brand and market position. It's rare to find a partner that has such a similar ethos when it comes to technology, developing products that solve customers' needs and cultivating its people."
dmglumiere.com *rosco.com*

Orca Sand/Water Bags

There's a famous, perhaps apocryphal, story about the epic film *Lawrence of Arabia*. The story goes that Freddie Young BSC and crew, filming in Jordan, need more sandbags. Several thousand sandbags. They're in the desert. Samuelson Film Service is contacted in London. "Sammys" charters a C-130 airplane, at great expense, and flies several thousand fully-filled sandbags from London to the desert in Jordan.

If they only had new Orca refillable Water / Sand Bags — it would have been much easier than flying more sand into the desert.

The new Orca Sand/Water bag can be filled on location. The bag is made of durable material with extra reinforced binding straps all the way around and dual layers of hook and loop fasteners to avoid any sand leakage.

Each OR-81 Sand/Water Bag accepts up to 2 OR-81B Water Tanks. The OR-81B Water Tank is sold separately and can hold up to 3 liters of water in each tank. With 2 filled Water Tanks, the OR-81 Sand/Water Bag has a total weight of 20 lb.

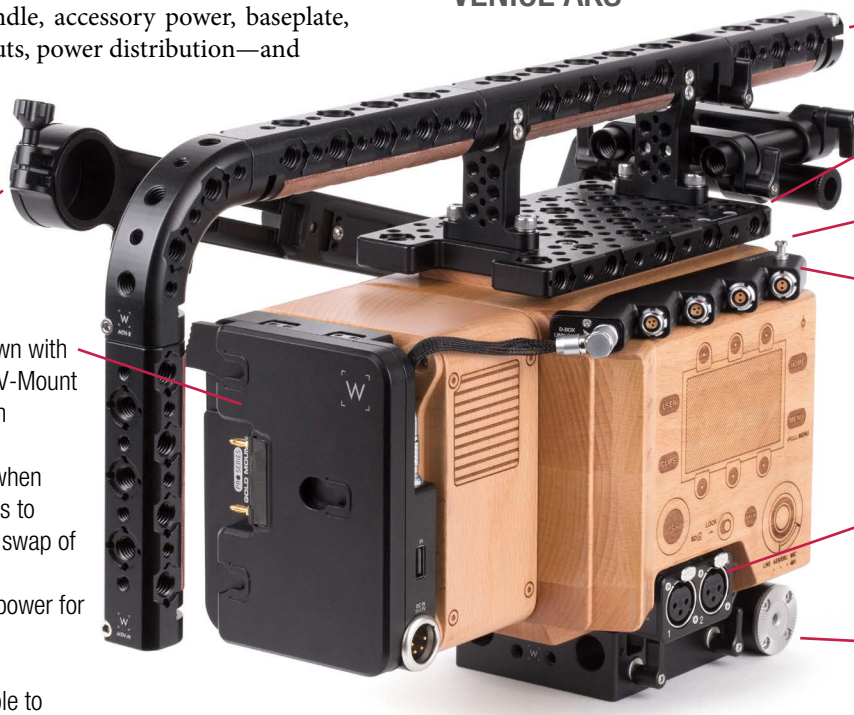
So, if you're doing the remake *Lawrence in Arabia*, you won't suffer Lawrence's dehydration problems. You can definitely drink the water since it is made for camping. You can fill each water tank up to 3 liters. *orcabags.com* *16x9inc.com*

Wooden Camera

Hollywood your VENICE.

Wooden Camera has all the things you would ever wish to find on VENICE: top handle, accessory power, baseplate, dual audio XLR 3-pin inputs, power distribution—and good looks.
woodencamera.com

VENICE AKS



Wooden Camera Master Top Handle

Top Cheeseplate for Sony VENICE

Tape hook

Power Strip (part of D-Box System)
- 2x RS 3-pin Fischer 24 V with Remote Start/Stop
- 2x 2-pin LEMO 14.4 V

A-Box for Sony VENICE 2x XLR Audio Inputs (VENICE only has 1x 5-pin Audio XLR)

Solid Baseplate for Sony Venice

Finder Extender: AIR EVF Extension Arm for Sony Venice

D-Box for Sony Venice —shown with Gold Mount. Also available in V-Mount
- Intelligent power distribution
- Digital fuse
- 1x 4-pin XLR DC Input — when powered, allows accessories to remain powered during hot swap of batteries
- 2x D-Taps with 14.4 V DC power for accessories
- 1x USB 5 V
- 1x 5-pin connector and cable to Power Strip

Quick Release

Variously known as Touch 'n Go, Euro Plate, Sachtler Quick Release or RBQ (Ronford Baker Quick Release), these are undoubtedly one of the fastest and most secure ways to attach a camera to a head. There are two parts: the plate that screws to the bottom of the camera and the receptacle to grab it.

Initially, there were two sizes: 80mm mostly for 16mm cameras and 120mm for 35mm. Sachtler, OConnor and Cartoni had Quick Release "receivers" in their heads. Ronford Baker made helpful Quick Release receptacles that many assistants had on the camera truck shelf, their carts and on low-hats. They are indispensable.

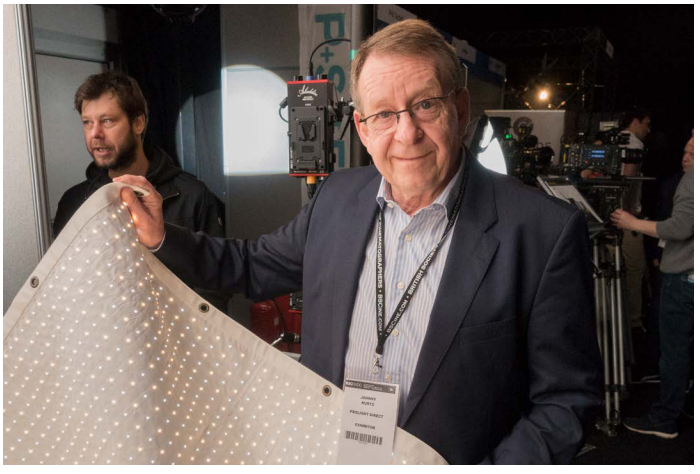
Now Wooden Camera makes the plate, the receiver and calls it the Touch and Go System. Get many of them.

Rosettes

Wooden Camera and many other companies make comfortable handgrips. The annoying thing about many of them (except SHAPE) is having to turn a thumbscrew to loosen, adjust and tighten.

Wooden Camera's new Push Button Rosettes let you adjust the a rosette itself with a push of the button.

BSC Expo Feb 2-3, 2018



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