

## The Big Picture

IN HIGH-END CAPTURE, LARGER SENSORS ARE BECOMING THE NEW NORMAL | BY DARON JAMES



Digital cinema camera design is currently shifting toward larger sensors. To establish an identity, manufacturers must contend with inevitable trade-offs when considering resolution, dynamic range and low-light performance. Here are five companies leading the way:

### RED DSMC2 MONSTRO 8K VV ▶

**THE INNOVATION:** The DSMC2 MONSTRO 8K VV is RED's latest chapter in cinematic image capture. The full format sensor delivers 17 times the detail of HD and can shoot motion or stills in 8K (8192 × 4320) at up to 60 fps and in 8K (8192 × 3456) at up to 75 fps. Paired with its latest image processing pipeline (IPP2), the workflow offers better color management from preproduction to post, including more accurate mid-tones, improved shadow detail, and standardized color space and gamma settings.

#### THE SPECS:

- Sensor Type:** CMOS  
(35.4 megapixels)
- Sensor Resolution & Size:**  
8192 × 4320  
40.96 × 21.60 mm  
46.31 mm (diagonal)
- Pixel Pitch:** 5 μm
- Dynamic Range:** 17+ stops



**IN PRACTICE:** In filming *Maleficent: Mistress of Evil*, director Joachim Rønning stylized a natural look to showcase the fantastical universe. “Most of the movie was shot in a controlled environment, so it was important to me to make those little mistakes—to see those sudden

lens flares or handheld moves—to make things feel accidental and natural,” says Rønning. “The MONSTRO allowed us to do that and create visually intimate and unique possibilities that I hadn’t experienced since I was shooting short films back in Norway.”

PHOTOS: (LEFT) WALT DISNEY MOTION PICTURES; (RIGHT) RED

## ARRI ALEXA LF/ ALEXA Mini LF ▶

**THE INNOVATION:** After 100-plus years of technical advancement, ARRI has developed a large format “LF” camera system outside its ALEXA 65 brethren that can shoot native 4.5K. The ALEXA LF and ALEXA Mini LF are complementary cameras, touting the same sensor, recording formats and color science for a seamless integrated workflow. ARRI also introduced a new LPL mount and telecentric-designed Signature Prime lenses to complete the look.



### THE SPECS:

**Sensor Type:** ALEV III (A2X) CMOS  
(13.77 megapixels)

**Sensor Resolution & Size:**  
4448 x 3096  
36.70 x 25.54 mm  
44.71 mm (diagonal)

**Pixel Pitch:** 8.25  $\mu$ m  
**Dynamic Range:** 14+ stops



**IN PRACTICE:** For *Lyrebird*, director Dan Friedkin knew he wanted the film to have a European style and feel, and a story conveyed through “honest, straightforward, framing, shot in a very classic style” with “grounded colors and strong blacks to match the tone of the film and period as opposed to a highly saturated glossy look.” In creating the film’s visual grammar, Friedkin says, “The ALEXA LF allowed us to achieve the balance we wanted.”

## ▶ Panavision Millennium DXL2



**THE INNOVATION:** The DXL2 offers a full end-to-end ecosystem from 8K capture, optics, color management and proxy workflows, and it is optimized for Output, a mobile post-production lab that renders dailies. Though paired with a RED MONSTRO 8K VV sensor, according to Michael Cioni, Panavision Senior VP of Innovation, the DXL2 separates itself visually by using “a film-inspired color pipeline that emulates the look, feel, contrast, highlight roll-off and tonal curves of popular film stocks.”

### THE SPECS:

**Sensor Type:** CMOS  
(35.4 megapixels)

**Sensor Resolution & Size:**  
8192 x 4320  
40.96 x 21.60 mm  
46.31 mm (diagonal)

**Pixel Pitch:** 5  $\mu$ m  
**Dynamic Range:** 16+ stops



**IN PRACTICE:** The original DXL captured dozens of films, television and commercials. The DXL2 has been favored on Dan Gilroy’s *Velvet Buzzsaw* (above), John Lee Hancock’s *The Highwaymen* and the Amazon Prime series *Homecoming*.



## ◀ Sony VENICE

**THE INNOVATION:** The Sony VENICE features 6K resolution, dual base ISO of 500 and 2500, an interchangeable PL or E-mount, integrated ND filters and improved color science. The sensor sits slightly above full frame, supporting everything from 4K Super 35 to anamorphic and spherical. With firmware v4.0, 120 fps in 4K Super 35 (4096 x 1713) is now available, with more advancements possible in the future.

### THE SPECS:

- Sensor Type:** CMOS (24.4 megapixels)
- Sensor Resolution & Size:**  
6048 x 4032  
36.2 x 24.1 mm  
43.5 mm (diagonal)
- Pixel Pitch:** 6 μm
- Dynamic Range:** 15+ stops



**IN PRACTICE:** Gavin Hood used the Sony VENICE on the upcoming *Official Secrets*, about the true story of Katharine Gun (played by Keira Knightley), who leaked top-secret documents leading up to the 2003 invasion of Iraq. “Knowing that we were very dependent on performance, we made sure we could photograph the actors to allow the audience to connect with them as intimately as possible, especially in moments of nonverbal communication,” says Hood. “With the larger sensor, we were able to tightly control the depth of field so the audience is compelled to look into Katharine’s eyes—to see her mind turning while she’s making these difficult decisions.”

## Canon EOS C700 FF ▶

**THE INNOVATION:** Released in 2008, the Canon EOS 5D Mark II turned independent filmmaking upside down. Most recently, Canon released the EOS C700 FF, which captures 5.9K RAW up to 60 frames per second. Unique are a sensor with three selectable modes—full frame, Super 35 (crop) and Super 16 (crop)—and a debayering algorithm that oversamples the 5.9K recording in 4K/UHD.

### THE SPECS:

- Sensor Type:** CMOS (18.69 megapixels)
- Sensor Resolution & Size:**  
5952 x 3140  
38.1 x 20.1 mm  
43.1 mm (diagonal)
- Pixel Pitch:** 6.4 μm
- Dynamic Range:** 15+ stops

**IN PRACTICE:** Since the EOS C700 FF’s 2018 debut, it’s gaining traction among the documentary crowd and capturing Netflix and Comedy Central series.

