Jon Fauer, ASC www.fdtimes.com June 2013 Issue 54

FILM AND DIGITAL TIMES

Art, Technique and Technology in Motion Picture Production Worldwide

Preview

FILM AND DIGITAL TIMES

Art, Technique and Technology

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

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

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FDTimes Jun 2013 Issue 54

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Cover: Camera Assistant and PhotoCineRent team member Kate Eccarius, Sony F55, Leica Summilux-C, CineTape. Photo by Albrecht Gerlach.

Introduction

Welcome to the FDTimes anamorphic edition, NAB after-party and the Cannes-Cine Gear mid-year celebration of new cameras, lenses, lights and accessories. You can hear the lens choir, "Lighter, smaller, faster, quirkier," the camera chorus "4K, More K, modular," and the producers chanting, "wider screens, bigger blockbusters, but not a penny more."

NAB 2013 launched a new wave of anamorphic fervor, an evolution of democratized digital motion picture aspirations. Once considered a lofty and expensive format, with a rarified supply of high-end cameras and lenses, it was accessible mainly to an elite technoligarchy. The new anamorphic lenses presented this spring promised to be not only plentiful, but also (relatively) affordable.

NAB exhibits were open from April 8-11 in the Las Vegas Convention Center. Opening day, like Pamplona, was like the running of the bulls—bullish geeks. Because there were 3.2 million square feet of exhibits to cover, our apologies go out to anyone omitted.

Cassie Jaye, filmmaker and FDTimes Booth Manager

Cine Gear Premiere: New Preston MDR3

MDR2

New MDR3

Preston Cinema Systems has a new MDR3 to show at Cine Gear. MDR stands for Motor Driver: the control box that clings to your camera, receives wireless commands from a FI+Z Hand Unit, drives the focus-iris-zoom lens motors, sends data back to the Hand Unit with /i and CineTape information, and starts/stops the camera. How is the new MDR3 different from the previous MDR2 model? Howard Preston explains:

The new MDR3 is in response to two trends. Camera manufacturers are squeezing digital cameras to ever smaller sizes while at the same time providing 4K (or more K) resolution images. Lens manufacturers are offering products that meet or exceed the performance of these new cameras. The lenses come in a wide range of sizes, and a correspondingly wide range of drive requirements. Many of the largest lenses have focus rings exceeding 125 mm (5") in diameter. These include the Fujinon Premier, Angénieux 24-290, and many long focal length anamorphic lenses.

To pull focus without discernible lag on these large lenses, the motor driver unit must be able to provide a large amount of power: high speed and high torque at high efficiency. At the same time, the optical performance of these lenses demands correspondingly higher precision from the motor driver. At the other extreme, the new high performance prime lenses, both spherical and anamorphic, require less power, but high precision remains essential. In all cases, the motor driver must be able to work with any lens, any size, without the possibility of causing damage.

The MDR3 addresses these demands by offering higher power and higher efficiency than the MDR2 in a package that's 31% smaller in volume and 7% lighter. Although its size is scaled down, it supports the full range of our digital motors from the DM1X to the DM4.

Motor torque is set by a tactile switch adjacent to each motor connector and an RGB tricolor LED indicates the setting. Automatic motor calibration detects the mechanical limits of the lens and prevents damage.

For example, when you want to focus a 24-290 zoom, its large 6"diameter means that the motor has to be about twice as fast as for a Summilux-C prime. In fact, we recommend our DM1X for large zoom lenses because it is about twice as fast as its smaller brother the DM2. At the other extreme is our DM4 motor, our thinnest, which is fine for smaller lenses.

Since the cameras are smaller, one of the things we wanted to do was eliminate the need for external adapter boxes, for example when using a CineTape or Fujinon Cabrio Servo Handgrip.

The CineTape can be connected directly to the Motor Driver without any interface box, and that's probably the most common thing that gets plugged into the MDR. There are two serial ports and it goes into one of them. The second connector can be used for metadata or with a motion control device.

Another thing we wanted to do was to improve the ergonomics. We replaced the mechanical switches that were used to control and indicate the wireless channels with two digital displays so that the channel selection can be seen from either of two sides of the MDR. Dedicated up-down buttons make it easy to change channels.

Metadata can be provided as well as stored. You can plug a thumb drive into the USB port through an adapter. The MDR time-stamps the lens data packets so that you can, in post, correlate the lens data with the actual movement and position of the lens.

An important new feature is an analog input. This was made for Steadicam operators who requested a small Microforce zoom control module mounted directly on their Steadicam handle. This will also be helpful for camera operators who like to have a Microforce force sensor button mounted to their tripod pan handle and hardwired to the MDR3.

The analog input works with existing Analog or Digital Microforce controls. We're also going to make a mini Microforce module to be used in conjunction with the MDR3. This is for people who don't need all of the standard Microforce's capabilities to directly drive motors.

The new MDR3 has 4 motor driver outputs. They can control focus, iris, zoom motors and something else—like a motorized grad or Obie Light. The motor outputs can also be set up to drive a pair of stereo lenses or control the lenses on a multi-camera rig.

The MDR3 has a timecode connector. It just says T/C. You'll see it on the same side as the USB connector. At the beginning of the day, you can jam-sync video, audio, slate and MDR3. We also have genlock capability through the same connector. For example, if you're connected to the genlock output of the camera, then all the data will be frame synchronized.

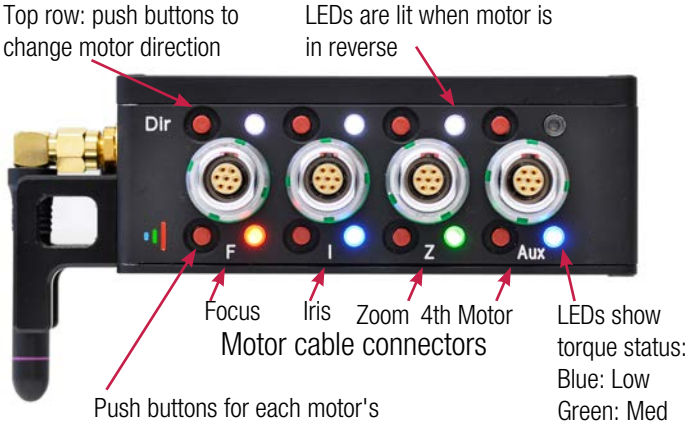
The MDR3 is not just a receiver; it is also a transmitter. Data travels via our own G4 microwave link in both directions. This is used, for example, to send /i lens data or CineTape measurements back to the FI+Z Hand Unit so it can be displayed there. Its automatic function detects the device connected to the serial port, and the display will identify what's plugged in. So, if you plug in a CineTape, it will immediately display "CineTape" and then show the CineTape distance or the /i lens distance. The /i lens metadata comes from the /i lens connector via a cable directly into the MDR3 serial port.

Something else has been added that's also automatic. On the previous MDR2 motor driver, if you wanted to go between cable and radio, there was a mechanical switch to change from cable to radio. Now it's all automatic. When you plug in a cable, it turns off the radio.

We are confident the MDR3 will continue our tradition of very robust, reliable, high performance and high quality products, designed and manufactured to control your lenses and cameras for many years to come.

Preston MDR3

Approx Actual Size



Preston MDR3 Specs

- MDR3 Chassis is 31% smaller than MDR2
  - MDR3: 3.95" x 3.95" x 1.5" (MDR2: 4.7" x 3.8" x 1.9")
- MDR3 is 7% lighter: 500 g (MDR2 is 535 g)
- New: additional motor port
  - Lens control for stereo cameras using prime lenses
- Improved G4 radio
  - Completely backwards compatible
  - Adds new channels 30-59
  - Eliminates co-channel interference on channels 30-59 when directly next to other FI+Z units.
  - New digital channel displays eliminate mechanical switches
  - Automatic Cable/Radio switching
- New analog input port accepts inputs from:
  - Microforce zoom controls
  - Video style lens controls from Canon and Fujinon
- Camera port
  - Supports R/S for Arri, RED, Sony, most digital cameras
  - New: Support for Canon C300, C500
- Timecode and genlock port
- Store lens metadata on USB stick (in development)
- Additional serial port for direct connection (no interface boxes) of accessories:
  - CineTape
  - Fujinon digital lenses
  - Canon digital lenses
- New USB port
  - Update firmware with cable connection to PC or Mac
  - Stores lens metadata to flash drives
- Simple mounting options
  - V-lock quick release for Alexa, F65, F55, other cameras
  - Clamp to mattebox rods

Apocalypse Now, Blade Runner, Close Encounters of the Third Kind, Bridge on the River Kwai, Evita — if you were enthralled by the look of these classic 'Scope films, you may be considering anamorphic lenses for your next production. Angénieux, ARRI/ZEISS, Cooke, and Scorpio showed prototypes of new anamorphic lenses at NAB, some expected to be ready later this year, others next year. If you need your anamorphics right away, Hawk primes and zooms have been made by Vantage for the PL world in Weiden, Germany since 1995. Panavision has covered the PV world since the late 1960s. Lists of anamorphic lenses to purchase or rent, ready now or in the future, begin on page 12 Hawks are mostly rented; a few are sold. Panavision only rents. But first a few words about anamorphic.

In December 2009, I wrote, "Pretend for a moment that you are a Studio Mogul. It's your job to predict the next big thing and plan accordingly. Unlike the local television weather forecaster, who gets it wrong most of the time, you will be summarily escorted off the lot for anything less than perfect prophecy.

"After the 3D Gold Rush of 2009, how will you lure audiences out of their HD, 3D, and soon 4K-equipped home theaters—and propel them into popcorn-popping and snack-selling multiplexes? In two words, as Sam Goldwyn might have said, 'Anamorphic.'"

Twentieth Century Fox bought the rights to the technique from Henri Jacques Chrétien in 1952 to produce *The Robe*, the first feature filmed with an anamorphic lens. It was promoted as "'the modern miracle you see without glasses," to compete with the 3D movies being made at the time—and TV. (The *Today Show* also premiered that year.) Sound familiar?

Once upon a time, films were mostly shot in a 1.33:1 ratio. This evolved over time to wider 1.66:1, 1.85:1, and eventually 2.40:1 widescreen ratios. The 2.40:1 aspect ratio means the picture is 2.40 times wider than it is high. You can use either spherical or anamorphic lenses. The ratio is the same. The process differs.

With spherical ("normal") lenses, the 2.40:1 aspect ratio "wastes" a lot of unused space on the sensor or film negative. The top and bottom of each frame is cropped, or letterboxed, out.

With anamorphic lenses, the width of the picture is squeezed (usually by a factor of 2x) to fit the sensor or aperture. This lets you use the entire image capture area, without letterboxing, and the result is a picture with more pixels, more resolution, and less noise . This was one of the original reasons why anamorphic ('Scope) was developed in the first place in the 1950s—to use more film negative area, with less grain and more resolution.

Peter Martin of Vantage Film, makers of Hawk Anamorphic lenses, explains, "Anamorphic lenses use cylindrical elements to squeeze the image in one axis only—the width, not the height. That means an anamorphic lens has different focal lengths: the horizontal part of the image is the wider focal length and the vertical is the longer focal length. Also, the lens has two nodal points. (The nodal point is where all light beams converge when going through the lens.) One nodal point is for the horizontal part of the light rays, and the other one is for the vertical. Essentially, the lens records the image in a sort of three-dimensional way.

"It's similar to looking at a landscape with one eye closed. If you hold up your hand and move it closer to you, your hand will covering more of the background. Move side to side, and you reveal different perspectives behind your hand. You get information about the three-dimensionality of the room. Anamorphic lenses do something similar: providing the two dimensional sensor a part of the three-dimensional information. It's almost 3D, perhaps 2.5D."

There's something inexplicably appealing about anamorphic lenses, and it's not inextricably tied to blue line streaks or oval bokehs.

Peter continues, "The anamorphic look is very elegant. The lens is not a neutral technical observer. Instead, it is subjective. It changes the scene slightly, adding out of focus areas, providing depth to a sequence. It's very appealing for faces, good for beauty. It gives actors a beautifully cosmetic, elegant, interesting, different look. With a long spherical lens, the face might look flattened, which is not always flattering. The anamorphic lens gives you depth and is pleasing. A lot of cinematographers are using anamorphic lenses mainly because they look so beautiful for faces."

A good way to select the appropriate anamorphic lens for a specific scene is to think in terms of the vertical focal length. Use the same numbers as you would for spherical. A 100 mm anamorphic lens gives you the same headroom as a 100 mm spherical lens. Of course, the 100 mm anamorphic will be twice as wide as the spherical 100 mm — equivalent to a 50 mm spherical in its horizontal field of view.

If you were thinking in terms of a 100 mm spherical lens and wanted the same horizontal field of view in anamorphic, you'd choose a 200 mm anamorphic lens. Of course, the vertical axis would be "tighter" because the vertical angle of the anamorphic is the same as the spherical.

The out of focus look of a 200 mm anamorphic lens is different from the spherical 100 mm. You get less depth of field. An actor would appear more separated from the background. Anamorphic lenses whose cylinders are in front will provide oval shaped bokehs. The out-of-focus hot spots in the background will be egg shaped. The more out of focus they are, the more squeezed they will appear to be. Rear anamorphics don't have oval bokehs, and the rear anamorphoser results in a stop of light loss. Some of the new anamorphic lenses on the next pages are hybrids, with cylinders spread among several elements throughout the lens.

Anamorphic Math

The lines were long at NAB to get on waiting-lists for new anamorphics. But there's a catch. Although film cameras are mostly 4:3, only one line of contemporary digital cameras takes full advantage of this 2x anamorphic 4:3 format: ARRI Alexa. I hope ARRI will not wince when I exhort the other camera manufacturers to remember their history lessons. The math that made Panavision, Technovision, JDC and others famous somehow seems neglected recently.

Here are diagrams and numbers explaining how the anamorphic 2.39:1 format benefits more from a larger sensor than spherical 2.39:1, and why 4:3 sensors are better than 16:9 for anamorphic.

Figure 1 shows an image area of 234 sq mm² for Super 35 spherical widescreen 2.39:1 — the same area on both 4:3 and 16:9 sensors. The top and bottom are "thrown away"—letterboxed.

Figure 2 shows an image area of 376 mm² for anamorphic 2.39:1 format on a 4:3 sensor. Much bigger.

Figure 3 shows how 16:9 sensor cameras crop the image by a factor of 1.8x and have much less resolution than 4:3 sensors shooting anamorphic 2x squeeze format.

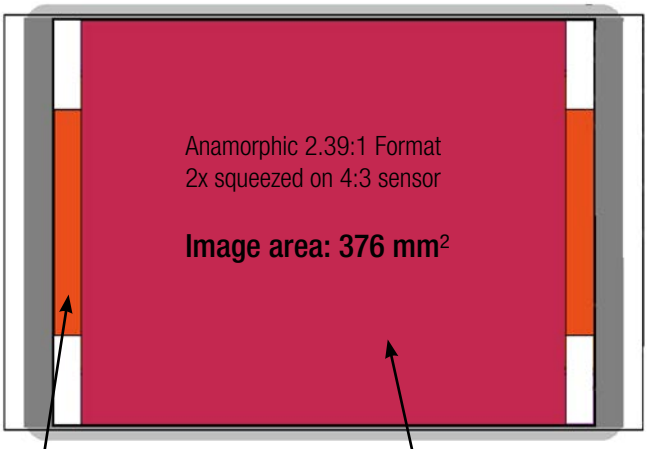
FDTimes has discussed and will continue to examine the different aesthetics of Hawk 1.3x anamorphics on 16:9 sensors. Meanwhile, the prevalence of 2x anamorphic lenses available from all companies today, with more planned this year, make a compelling argument for additional 4:3 sensor cameras.

4:3 Sensor with 2x squeezed image

16:9 Sensor with same lens and same 2x squeezed image: the smaller sensor size crops image by a factor of 1.8x and Linda gets a haircut

Fig 1. Spherical 2.39:1 on 4:3 Alexa Sensor

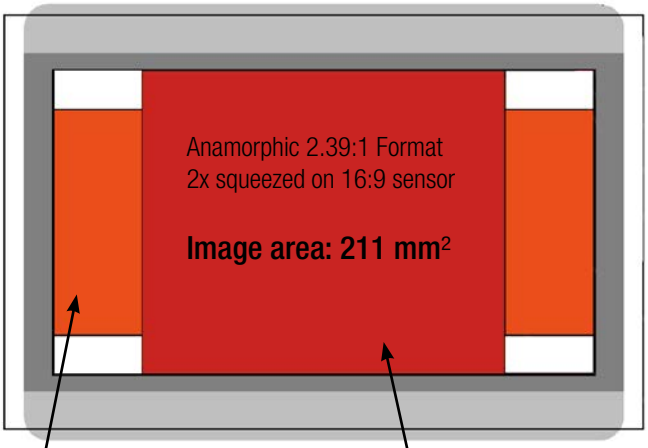
Fig 2. Anamorphic 2.39:1 on 4:3 Alexa Sensor



2.39:1 Spherical (Flat) Super35
2868 x 1200 Photosites
23.66 x 9.90 mm (Width x Height)
Ø 25.65 mm

2.39:1 Anamorphic
2x squeeze (1.195:1)
2570 x 2150 Photosites
21.20 x 17.74 mm (W x H)
Ø 27.64 mm

Fig 3. Anamorphic 2.39:1 on 16:9 Alexa Sensor



2.39:1 Spherical (Flat) Super35
Image area: 234 mm²
2868 x 1200 Photosites
23.66 x 9.90 mm (W x H)
Ø 25.65 mm

2.39:1 Anamorphic
2x squeeze (1.195:1)
1926 x 1612 Photosites
15.89 x 13.30 mm (W x H)
Ø 20.72 mm

Cannes Film Festival

Philippe-Rousselot on location for *Beautiful Creatures*. Photo: John Bramley – Alcon productions

Excellence + Lens = Excellens Award

Angénieux is an official partner of the 66th Cannes Film Festival and will honor French Cinematographer Philippe Rousselot, AFC, ASC with the newly established Pierre Angénieux "Excellens in Cinematography" event at the Palais des Festivals. The ceremony includes many prominent directors, actors and producers who have worked closely with Philippe Rousselot throughout his successful career.

Mr. Rousselot received an Academy Award for Best Cinematography in 1992 for the Robert Redford directed film *A River Runs Through It*. He has received three Cesars for Best Cinematography—in 1982 for *Diva*, directed by Jean-Jacques Beineix, in 1987 for *Therese*, directed by Alain Cavalier and in 1995 for *Queen Margot*, directed by Patrice Chereau. He served on the 1995 Cannes Film Festival jury.

Pierre Angénieux founded the company in 1935. Angénieux was acquired as a subsidiary of the Thales group in 1993.

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cinegearexpo.com

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