

Jon Fauer, ASC

Midsummer Online Report 2009 Issue 25.1 part 1

FILM AND DIGITAL TIMES



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publisher and editor: Jon Fauer
foreign correspondent: Oli Laperal, Jr.
contributing photographers: Dorian Weber, Mark Forman

For sponsorship information contact:
John Johnston (JJ) 585-259-9283 jj@fdtimes.com

FILM AND DIGITAL TIMES

In previous years, it was possible to digest the relevant news from NAB into a few pages. This year is different. Products were announced, then subsequently modified, added or subtracted. We've spent the intervening time writing and re-writing. Here is the first report, as a digital digest.

For me, the themes of NAB 2009 were PL mounted cameras, PL mount lenses and the path to 4K. Especially lenses. It seemed everywhere you looked in Central Hall, someone had a lens with a PL mount. It makes sense: an open standard with sensible specs.

Below is Oli Laperal's summary. What follows is an in-depth look at the companies beginning with A: Aaton, Angenieux, Abel and ARRI. The rest of the alphabet will follow in our sequels. -- Jon Fauer

NAB Report

By Oli Laperal, Jr.
Film and Digital Times Foreign Correspondent

In today's economic climate, many attendees carefully balanced the cost of trekking to Las Vegas for the NAB show, versus going online for information. Although there is no doubt that information from the web is expansive, there is no substitute for the real thing, the keynote addresses, conferences and workshops, as well as direct discussions with researchers, engineers, and CTOs of various companies. This year's NAB attendance of about 83,900 saw a decline of 20% from last year's 104,000+ attendees, but the people who were there were the decision-makers.

Under strict NDAs (Non Disclosure Agreements), Film and Digital Times had to go to great lengths not to reveal many details until the first day of NAB. Publisher and Editor Jon Fauer considered hiring armed guards and armored vehicles to transport the magazine to Las Vegas for distribution on Day One to comply with agreed NDAs. See Film and Digital Times' extensive NAB April-July 2009 Triple Issue 22-24. At 96 pages, this is FDT's most informative and voluminous issue thus far.

FILM CAMERAS and ACCESSORIES.

Aaton Penelope 2 perf / 3 perf 35 mm film camera is now in full production, delivering and shooting on major motion pictures.

At last, cinematographers can have video assist in full HD resolution. ARRI introduced the HD-IVS for Arricams and Arriflex 435 ES/Advanced or Xtreme film cameras. The new 1920 x1080 CCD sensor with a 10 bit processor employs a unique ground glass grain cancellation software to yield excellent HD video assist images, without ground glass grain.

ARRI showed the MB-28 mattebox, ideal for the Optimo 24-290 mm large zoom, a new PL mount director's viewfinder, and a wireless lens control system.

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DIGITAL CAMERAS

ARRI showed the D-21 HD/3K digital cinematography camera. To date, over 100 units have been delivered. The D-21 is capable of data recording in ARRIRAW, as well as MScope Anamorphic format.

ARRI expands film-style camera accessories for various digital cameras with the ARRI MMB-1 matte box, new follow focus, base plates and accessories.

Vision Research rolled out the Phantom v640 with digital on-board magazine that does HD at 2800 FPS.

P+S Technik Weisscam HS-2 high speed camera is an improvement of the HS-1. The HS-2 does 2K at 1500 FPS.

The SI-2K Digital Cinema Camera got instant fame with the huge success of Academy Award favorite and smash hit "Slumdog Millionaire" which was shot about 60% in SI-2K and the remaining 40% on Fuji 35 mm film.

The P+S Technik IMS (Interchangeable Mount System) is a nice manufacturer-agnostic lens mount for various cameras that welcomes Nikon, Canon, PL, BNCR, Leica, Pentax and other popular lens mounts.

P+S Technik promotes 3D filming with the 3D Stereo Rig, as well as a comprehensive 2 to 3 day 3D workshop conducted worldwide.

Panasonic showed material from the 2008 Beijing Olympics, and discussed plans for the Vancouver Winter Olympics. P2 "e" cards now come in 64 GB.

LENSES

It was the year of PL Lenses. Eleven manufacturers showed different sets of PL mount prime and zoom lenses for 35 mm film and single-sensor digital cinematography. It will be interesting to see how the adjectives used match the reality to come. Many were presented as "affordable, low cost, film/digital, lightweight, and new." Others held to higher ground, sparing no expense. The story will be continued; meanwhile here they are, listed alphabetically:

- Angenieux Optimo Rouge cost effective zoom line includes 30-80 mm and 16-42 mm T2.8 zoom lenses.
- Carl Zeiss Compact Primes come in 18, 21, 25, 28, 35, 50 and 85 mm in T3.6 to T1.5. They utilize a 14 blade iris, cover a 24 x 36 mm image, come in a new robust cine style housing, and have a blue band. Available July 2009.
- Cooke introduces a new line of Cooke Panchro prime lenses. Focal lengths are 18, 25, 32, 50, 75, and 100 mm. All at T 2.8, in Super 35 mm format. Expect these prime cuts later this year.
- Focus Optics (USA) is Stuart Rabin's company, and they showed the "Ruby Series" wide angle short zoom. 14-24 mm T2.8. These are rehoused Nikon stills short zoom lens,

and weigh only 3 lbs. Available Aug 2009.

- Fujinon showed 4 new very high-end zoom lenses for 16:9 format: 18-85 mm T2.0, 14.5-45mm T2.0, 24-180mm T2.6 and 75-400mm T2.8-T4.0.
- IB/E Optics (Germany) Made by Schneider. 14 mm prime lens in T1.8. Other prime lenses coming are from 10 to 180 mm, as well as a 12-24 mm zoom.
- Illumina (LOMO Russia) is sold by Luma Tech Inc USA. S35 high speed prime lens set comes in 18, 25, 35, 50 and 85 mm. Illumina also has a S16 high speed PL prime lens set: 8, 9.5, 12, 16, 25 & 50 mm in T1.3.
- P+S Technik's 35 Digital lenses in PL lens mount are Zeiss ZF (Nikon) still camera primes remounted. These come in 18 mm T3.5, 25 mm T2.8, 35 mm T2.0, 50 mm T1.4 and 85 mm T1.4.
- Rebel (Germany) prime lenses are for non-mirror reflex cameras, and will come in 25, 35, 50, 75 & 95 mm. T1.9.
- RED Digital showed 25, 35, 50, 85 & 100 mm prime lenses in T1.9. No, they are definitely not Cooke glass or Cooke mechanics, despite rumors.
- UniOptics (USA) showed several sets of fine looking prime lenses: 18, 25, 35, 50, 85 and 100 mm in T1.9. These signature primes were designed and manufactured in California by a team of optical experts formerly associated with Century Precision Optics, NASA, Panavision, Leitz of Canada, etc. Well respected lens wizards Kenji Suematsu and Peter Repick, along with with optical designer Hyperion Development LLC, are behind UniOptics. These prime lenses are optimized for full frame 35 mm motion picture film and digital. I was personally invited to see the primes lenses up close and personal as they were projected on a precision lens projector. The results I saw were very good
- ARRI's new Master Prime Macro 100 mm T2.0 does not have a "low cost" sticker, but that's what you'd expect from a Master Prime with exceptional close up quality, and 1:1 magnification ratio. I hope to see an expansion of this new line for macro cinematography.

UniOptics, P.E. Denz and IB/E Optics showed precision PL mounted instruments to check camera flange focal distance of exactly 52.00 mm.

LIGHTING

ARRI showed the "True Blue" lighting line in tungsten 1K, 2K & 5K, as well as in the HMI line at 1.2K, 1.8K, 2.5K and 4K.

The new ARRI M18 uses a new 1.8K HMI bulb, and is the brightest HMI to plug into a 20 Amp 120 VAC US wall socket. They use a new designed multi faceted reflector, like the one used on the Arrimax 18K HMI, which combines the punch of a PAR, without lenses and with a focusing mechanism.

ARRI Pax Panel is an advanced LED based lighting system that utilizes Leo modules. Light engines capable of 3200K or 5600K color temps. The ARRI Background Lighting Module is LED based lighting for cyclorama, screens, and rear illumination.



Litepanels expanded their 12" x 12" LED units with "Bi-Color" dual Kelvin temp models, as well as "Bi-Focus" dual spot/flood units.

POST PRODUCTION

ARRI offers new options for ArriCube DI process. These include 3D LUTs, X-Rite Hubble colorimeter for monitor and projector measurement.

Dark Energy's powerful post software for 35 mm film is to re-time, degrain, convert, optimize, re-touch and clean up. It is now part of the ARRI's Relativity line up of post tools.

P+S Technik's Steady Frame is a universal format 2K film scanner with improved performance and speed.

Western Digital 3.5" SATA drives store up to 2 terabytes (TB) per drive.

OTHERS

N.H.K. of Japan showed "Super High Vision" cameras, recorders, 400" giant display and live broadcast in 8K (7680 x 4320) with 22.2 multi channel surround sound.

They also showed dual Stereo 3D (with and without glasses).

URCF. The Ultra Realistic Communication Forum discussed:

The broadcasting industry in 8K.

3D video technology

Super surround sound technology

Multi sensory communication technology (including scent)

Perception and transmission technology of human affection and sensibility.

N.I.C.T. Japan's National Institute of Information and Communication Technology showed "Video and Audio that is no longer a dream:"

- Uncomplicated looking 3D images.
- Glasses-free large 3D display
- 100 million+ pixels, true high definition.
- See in 3D, hear, feel and touch. Multi-Sensory Interaction System. Using 3D glasses and while holding an electronic pen in mid air, we can follow the contour of a 3D object such as a enlarged coin, hear & feel as the pen we hold scratches the coin, flips the coin, taps on it and we hear the sound, etc. All this human sensory is generated although a pen we hold in mid air
- 3D, Graspable. Cubic Auto-stereoscopic Display
- 3D Audio. 76+speakers.
- Real Time Electronic Holography

Stereoscopic 3D feature film and production was a hot topic at many conferences and sessions. The Digital Cinema conference, as well as the Engineering conferences, discussed many aspects of 3D cinema. There are some twenty high profile 3D feature films scheduled for release in 2009. 3D for homes is not too distant. Imax theaters have 371 3D installations today. AMC theaters announced it is converting all its theaters, numbering over 4500, with Sony 4K projectors.

THOUGHTS.

As NAB draws to a close, I remember Charles Darwin's famous quote: "It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change."

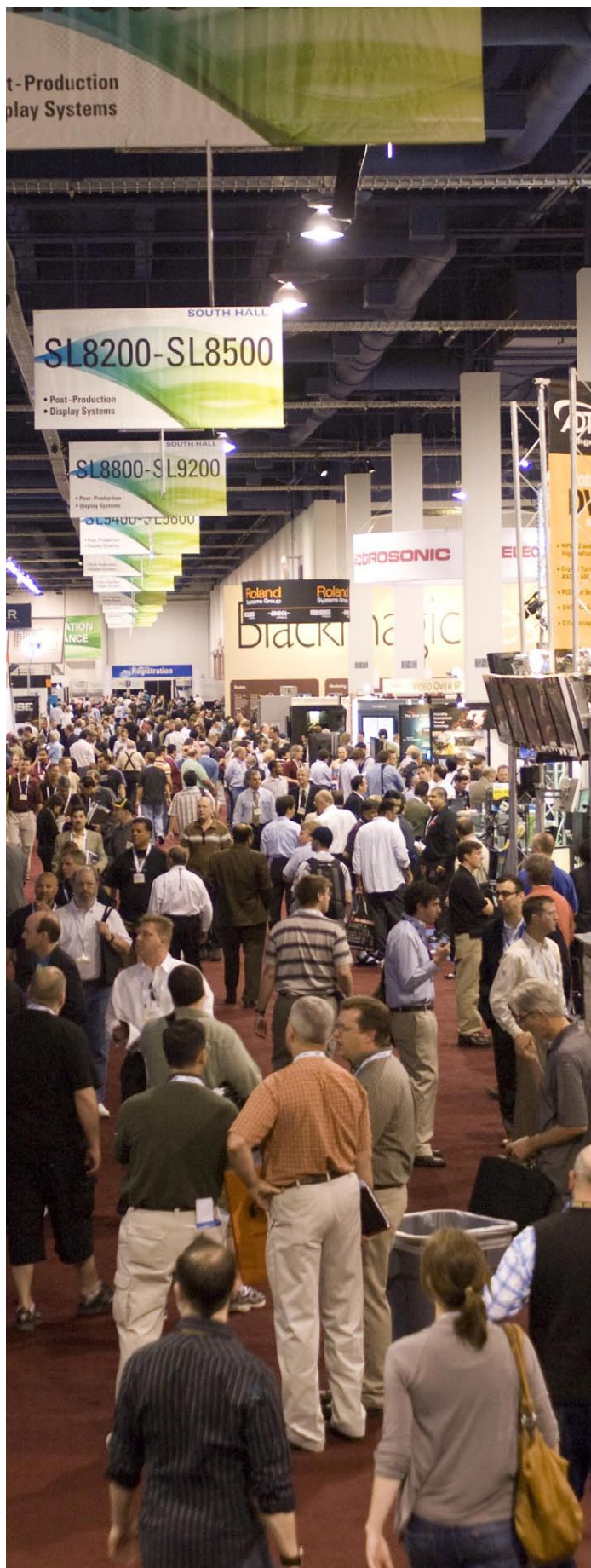
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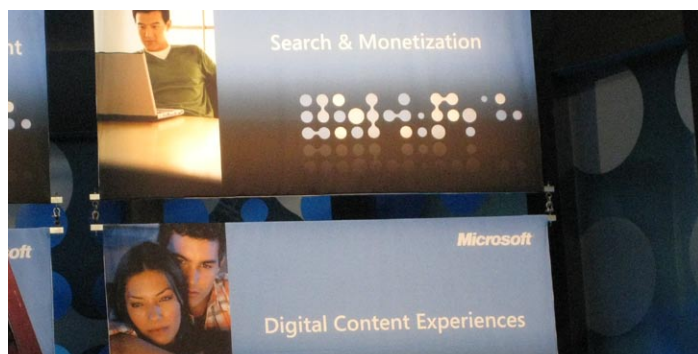
Las Vegas has a modern monorail and eco-friendly police officers. But you can't take the monorail to the Convention Center from the airport. Perhaps our politicians get together: getting from midtown New York to the airport is equally frustrating.



NAB Speak



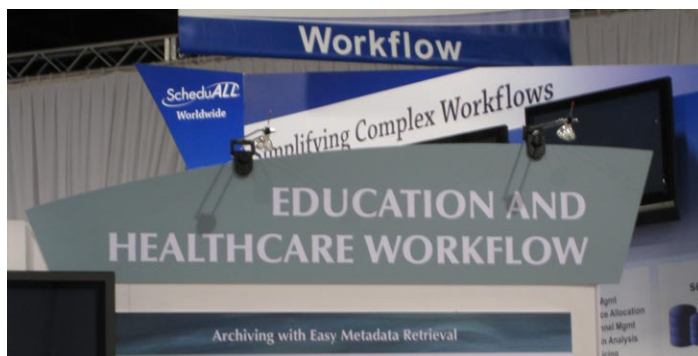
More buzzwords than a beehive: Solutions, Enterprise, Metadata.



Search and monetization. Digital content. Leverage the workflow for asset availability marketing jargon. Didn't they deduct points from your college essays when you resorted to technical jargon?



Workflow and Playback. Multi-channel no less, complete with workflow flow charts, circles and arrows. Dive for cover.



A torrent of workflows. Simplifying complex workflows, now with Metadata retrieval. Metadata is data and workflow is production.

Angénieux



Were the crowds of cinematographers and photographers at the Angénieux booth jostling for position because of Supermodel Linda (below, left) or the Optimo and other lenses on display?

Or was it the viral marketing campaign using attractive models handing out raffle tickets inviting text messages to announce winners? I'm sure it was the Optimo Lenses, of which our intrepid FDTimes photographers Dorian Weber and Mark Forman took more pictures (in Linda's hands) than any other product at the show.



Linda was seen a few weeks earlier at the Cannes Film Festival, with Jean-Pierre Beauviala of Aaton (below, right).

At Cannes, Angénieux lenses were used in the filming of four films included in official selection, including the winner of the 2009 Grand Prix, "Un Prophète" directed by Jacques Audiard, cinematography by Stephane Fontaine AFC.

In addition to "Un Prophète" on which Stephane Fontaine AFC used the Optimo 28 - 76 mm lightweight zoom, other winning entries filmed with Angenieux lenses included "Map of the Sounds of Tokyo" directed by Isabel Coixet, cinematography by Jean-Claude Larrieu AFC using Optimo 28-76 mm and 15-40 mm lenses; "les Herbes Folles" directed by Alain Resnais, and "Taking Woodstock" by Ang Lee, both with cinematography by Eric Gautier AFC using Optimo 17-80 mm and 24-90 mm lenses.

At Cannes, Angénieux participated for the first time in a Round-table Discussion hosted by the CST (Image and Sound Superior Technical Commission), the representative organization of cinema professionals for the technical supervision of films presented during the Festival. The Optimo 15-40 mm and 28-76 mm lightweight zoom lenses were honored with a Scientific and Engineering Technical (Sci-Tech) Award by the Academy last February.



Angénieux...Ingénieux



Frank Fisher with Penelope the Cat on Shoulder



Aaton



Frank Fisher (previous page) is the sales manager of Aaton. No relation that we know to Jimmy Fisher and Fisher Dollies.

Penelope is the silent 35mm handheld, 2 perf/3perf camera that is currently in huge demand in Europe, and with its total disregard for 4 perf, suggests something that we should pay attention to. Meanwhile, worldwide, there is a huge resurgence in 2 perf and also 3 perf production. This is not your father's Techniscope. The cameras are steadier; the film stocks are vastly better.

Here are some of the Aaton cameras and Cantar digital sound recorders used in the films at the Cannes Film Festival:

Ang Lee "Taking Woodstock"
Alain Resnais "Les Herbes Folles"
Jacques Audiard "Un Prophète"
Lars Von Trier "Antichrist"
Cherien Dabis "Amreeka"
Marina De Van "Ne te retourne pas"
Xavier Giannoli "A l'Origine"
Michaël Haneke "Das weisse Band"
Ken Loach "Looking for Eric"
Tsai Ming-liang "Face"
Gaspar Noé "Soudain le Vide"
Elia Suleiman "The Time that Remains"

Camera Aaton 35 (Eric Gautier) - Cantar (Drew Kunin)
Camera Aaton 35 (Eric Gautier) - Cantar (Jean Marie Blondel)
Camera Aaton 35 (Stéphane Fontaine)
Cantar (André Rigaut)
Cantar (Brock Capell)
Cantar (Carlo Thoss)
Cantar (François Musy)
Cantar (Guillaume Sciamia)
Cantar (Ray Beckett)
Cantar (Roberto van Eijden)
Cantar (Claude La Haye)
Cantar (Chris Monheim)





Rich Abel, COO (above).
Nathaniel Bonini, Director of Services (below)



Abel had a huge booth with huge array of products, including Phantom, Cam Tram, Panther Broadcast, and much more. More news followed NAB: Abel's New York showroom is now open on Saturdays. They seem to be sensing where rental houses are headed in the future: not just renting equipment, but providing technical support (after-hours, eventually, I would guess, 24/7), instruction, sales and post production services. As Blixt is doing in Denmark, I imagine this will include data wrangling, data recovery, dailies, down-converting, digitizing and other essential d-words. As cameras devour more data, it will become increasingly the responsibility of the rental house to manage the data and hand-hold (hand-wringing?) the data delivery boys and girls (cinematographers!)





Ned Traver with the latest Cam Tram (above and below)



Jesse Rosen, Director of Technology





Lots of new lights from ARRI at NAB.

Top of the list for me: hot news, cool new lights were the new M18 and ARRISUN 18, cleverly called the brightest HMIs you can plug into the wall. (That doesn't include the wall of the 15th century hotel I'm holed up in, writing this article in Italy at the moment, where even my electric shaver blows the fuse of the thin-as-a-thread wiring. But you can plug these lights into a wall outlet that has a single 120 VAC 20A circuit.

The Background Lighting Module (below) provides even LED lighting of cycs, screens and rear-illuminated panels with RGB or Warm/Cool White modules.

The ARRI PAX Panel (bottom) is an LED light control system with eight modules, an LED light engine, and software to provide consistent illumination and the ability to select specific colors without having to use gels. A wireless controller provides remote control for adjusting color temperature, as well as selection of colors as if gels were used on 3200K or 5600K sources.



ARRI Lighting



M18, AS18 and EB 1200/1800

Clearly the ARRI lighting department doesn't follow the National Geographic or Film and Digital Times style sheet: "thou shalt not use superlatives.) ARRI's M18 (brightest HMI you can plug into the wall) is based on the ARRIMAX (brightest HMI PAR on the planet) design. This new 1800 watt lensless, open-face light uses a new type of lamp: the 1800W SE HMI. It does not use lenses of a traditional PAR (or Fresnel), and the reflector design provides crisp shadows. The M18 (M as in Max) has a focusing beam angle of 20 to 60 degrees.

The ARRISUN 18 (AS18) uses common ARRI PAR spread lenses and a PAR reflector in combination with spot, medium and flood focus settings. Conversion kits are available to adapt an M18 to the AS18 (as well as an AS18 to a M18).

Both units use the new 1800W SE HMI bulb. also can accept a typical 1200W HMI lamp.

The M18 and AS18 use a new universal electronic ballast, ARRI's EB 1200/1800.





TRUE BLUE DAYLIGHT

ARRI Lighting released the sequel to their True Blue Tungsten lights: a new line of Daylight lamps: True Blue Daylight. These next generation HMI Fresnel daylight lamps include the following: D5 (575w), D12 (1200w), D25 (2500w), and D40 (4000w). No D21 -- that's a camera.

These fixtures are lighter in weight than their predecessors, provide similar light output, and have many improvements, including:

- Improved Disc Brake locking mechanism for heavy, front-loaded accessories like Chimeras and color scrollers.
- Sliding Stirrup for adjusting center of gravity to balance the lamphead.
- ARRI's Cross Cooling system enables the lamphead to be focused downward to 90°.
- TRUE BLUE Barndoors designed for strength, rigidity and flexibility.





PL MOUNT DIRECTOR'S VIEWFINDER

ARRI's PL Mount Director's Finder is very good. Finders like this should be called a Camera-less Finder, since it will undoubtedly be shared equally by Cinematographer, Camera Operator, Assistants and the Director. It's small, lightweight and bright. It uses standard Arriflex 435 groundglass (hundreds of different markings and formats available). Newly etched is a groundglass for RED One productions, with both the 16:9 and 2:1 active sensor area frame lines. Custom formats using the ARRI Ground Glass Composer are also possible. (www.arri.de/camera/ground_glass_composer.html) The finder accepts all PL mounted lenses, including zooms intended for electronic finders such as the Angenieux Rouge. The finder covers the full ANSI Super 35 format.



WIRELESS LENS CONTROL SYSTEM

Take 3 of Arri's Wireless Lens Control System, and like a certain computer company in the Northwest, three seems to be the magic number to get it right, which they did. Rental houses and woodworkers guilds in Scandinavia must have influenced the NAB version with its sculpted wood handle in Ikea tones, which I don't think is available as a stock item.

The Wireless Compact Unit WCU-3 is a remote control for camera on/off, focus and aperture. A zoom control (ZMU-3) can be also attached with an optional bracket. The WMU-3 works with the existing ARRI Wireless Remote System WRS.

The handgrip is adjustable. Buttons are backlit and the index scale is also lit. It runs cabled or wirelessly operation. The backlit color TFT display shows camera and lens status. The WCU-3 works with the ARRICAM Studio, ARRICAM Lite, ARRIFLEX 435 Xtreme, ARRIFLEX 416 Plus, and ARRIFLEX 416 Plus HS. For other cameras without wireless receivers, you can use a Universal Motor Controller UMC-3 or UMC-3A, and it also works with numerous other still (SLR) and video cameras. It is powered by a camcorder battery: the Sony Lithium M NP-FM 500H, for up to 12 hours of continuous operation.

The new CLM-3 motor is stronger and faster, and can drive stiff lenses like Variable Primes and monster zooms under extremely cold temperatures. To provide more mounting options, the gear now attaches on either side and the extension bracket can be mounted horizontally or vertically over the quick clamp shoe.

The CLM-3 is fully compatible with all existing lens gear systems on the market. Inserts convert the 19 mm diameter mounting hole to 15 mm rods.





Master Macro 100

shoots up to a 1:1 magnification ratio, with a maximum aperture of T2.0. Designed and built by Carl Zeiss, the optical performance of the lens matches the Master Primes, sharing design, special lens coatings and aspherical glass surfaces. The Master Macro exhibits even illumination and resolution across the whole Super 35 frame. It also has an advanced, multi-bladed iris, resulting in round and natural-looking out-of-focus highlights. The front element of the Master Macro 100 is set back within the lens housing, like a sun shade, which protects it from flares. With a magnification ratio of 1:1 and a close focus distance of 0.35 m, it can magnify objects beyond what diopters would allow. Color-matched to the Master Primes, Ultra Primes, Ultra 16 lenses and Lightweight Zoom LWZ-1.



MB-28 MATTEBOX - ARRI has designed the MB-28 Mattebox specifically to fit the Angenieux Optimo 24-290mm zoom in addition to prime lenses. One, three stage mattebox can now cover both needs. It is a 6.6 x 6.6 wide angle compact mattebox with the front two trays independently rotatable 360 degrees from the rear stage. In addition to 6.6 x 6.6 filters, the MB-28 incorporates 4 x 5.65 reduction tray inserts for smaller filter sizes. The rear bellows can hold a 6" round filter and can be stepped down to fit various lenses using standard MB-20 reduction rings. The swing away arm is available for 15mm and 19mm bridgeplates as well as Panavision standards.

MMB-1 ACCESSORIES



ARRI has designed several new accessories to maximize the system's cross compatibility. New top and side flags provide greater light control. A 138 to 130mm adapter is now available to step down the rear clamping mechanism for compatibility with the complete line of MB-20 clamp adapter rings. New filter frames for the popular 4 x 4 size are available along with a 4. x 5.65 tray with closed corners. For those wanting to use horizontally graduated filters, a retrofit kit is available to adapt the rear stage to a top-loading configuration. The current back diameter of the MMB-1 is 138mm; a retrofit kit for a 143mm will accommodate the standard MB-20 bellows rings while allowing greater clamping compatibility for larger lens diameters.

ARRI High Definition Integrated Video Assist (HD-IVS)



HD IVS Arriflex 435 Xtreme



HD IVS Arricam Lite



HD IVS Arricam Studio

ARRI's High Definition Integrated Video System (HD-IVS) provides an image much better than the murky pictures you've been watching for the past epoch on your assistant's and director's monitor.

With a wide dynamic range and good color reproduction, along with ARRI's Ground Glass Cancellation (GGC) technology, you will be treated to HD high quality video assist.

A new 1920 x 1080 CCD sensor combined with 10 bit processing supplies three 1920 x 1080 HD-SDI outputs with better color reproduction and three stops more dynamic range than its standard definition predecessor.

ARRI's Ground Glass Cancellation technology removes the dreaded ground glass texture, so you can actually see a pretty good image.

The new motorized iris exposure control improves exposure and signal/noise ratio for the HD video assist image.

The HD-IVS can capture HD still images onto a USB stick (to send frame-grabs to the lab, for your camera log book or for the script supervisor).

Anamorphic images can now be electronically de-squeezed directly in the video assist.

The HD-IVS keeps most of the other features of the standard definition IVS: flicker free mode, built-in frame line and text inserter, automatic or manual gain control and various white balance options.

There are three version, one each for the: ARRICAM Studio, ARRICAM Lite, 435 ES/Advanced or Xtreme.

ARRI Relativity



Introduced at NAB, ARRI Relativity is software that lets you remove film grain and noise, among other things. It was shown in a darkened room at the back of ARRI's booth, and was an important, interesting look at where things are headed, and what cinematographers should know about. The current applications are Texture Control, Film Simulation and SpaceTime Converter, with more coming soon.

Texture Control works on de-graining and removing digital noise. It also lets you mix and match the textures and grain of 16mm, 35mm and digital images, for a particular effect or visual continuity (for example, intercutting 16mm, 35 and digital). As we saw at NAB in the ARRI booth with side-by-side demos, de-grained Super 16mm or 2-perf 35mm can look amazing with texture control. You can also add grain with Film Simulation module, for example, to cut video or CGI in with film scenes, or to cut old negative together with new. It's good to remember that the 16mm of today has less grain than 35mm a decade or two ago, and current 35mm approaches 8K or more in contemporary comparison.

SpaceTime Converter is used to convert any TV or motion picture format into another, with crop/zoom, spatial resampling, frame rate conversion, de-interlacing and addition or removal of 3:2 pulldown. It supports real-time processing of HD or SD images. It does audio format conversion and resampling (with or without pitch correction), and resampling time for creative tempo changes, slow motion and speed ramp effects.

In the works are Retimer and Clean modules. Retimer provides artifact-free, single pass runtime length of video and audio (up to plus or minus 10%), to customize programs to fit into new time slots (like the 32 second spot from Japan that needs to be exactly 30 seconds in the US).

Clean provides automated removal of dirt and scratches from film with impressive speed, which is helpful because it can take up to a day to dust-bust 1,000 feet of film manually.

Specs

File formats: DPX, Cineon (10 bit RGB)
Streaming Formats: Uncompressed QuickTime. Compressed QT and AVI formats available with user-installed codecs, quality and performance may vary.
Video I/O: Dual HD-SDI 4:4:4 or 4:2:2 via Blackmagic DeckLink Studio capture cards
Audio: Audio format conversion and resampling (with pitch correction)
Workstation: Core i7-920 Quad-Core 2.66GHz, GeForce® GTX 285
Video display: Dual DVI or HDMI connector
Network Connections: 2 Gb Ethernet ports
External storage: eSATA, USB 2.0 connector
Additional Options: 4 GB Fibre Channel, 10 GB Ethernet, Infiniband, HD-SDI (Black Magic)
Power requirements: 110 V/60 Hz or 220 V/50 Hz, 1000 W
Internal Storage: 2 TB RAID 5 Storage, upgradable to 3.6 TB
Operating system: Windows XP

D21 and S.two



L to R: Chris Romine and Steve Roach of S.two Corp, and Bill Lovell of ARRI with S.two solid state on-board magazine for D-21 and seen elsewhere at show on Sony F35.



Left: ARRI Inc COO Charlie Davidson and Franz Wieser, VP International Marketing

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