

# Videomaker

YOUR GUIDE TO CREATING AND PUBLISHING GREAT VIDEO NOVEMBER 2012

First Hand's-On Look!

Sony

NEX-VG900



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- Fix It in Post Audio Tips
- Directing Green Screen Stunts

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On Sale November 27, 2012

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by Matthew York

## Tablet Editing

There are some things about editing video on a tablet which seem enticing. We are still in the tablet's early years and the iPad and Android versions don't quite have the horsepower for complex video editing, but in years to come new tablets will have all the power one may desire. Tablets have already proven to be a wonderful form-factor for reading. They provide a great deal of freedom for the user compared to other devices.

A desktop or mobile PC requires the typical display and interface configuration where the display is in front of your face, and the controls are on a horizontal surface under your hands. A tablet's display can be used flat on your lap, on a coffee table, on the floor, on a bed or on a desk. Rotating between some or all of these choices makes for a more ergonomically diverse video editing experience and may have an impact upon creativity. The touch screen can be much more precise compared to a mouse and more vivid. When using a mouse, we have trained our hands to approximate where our hand and fingers correspond to the computer display. With a tablet we use our fingers on the display so the correspondence is vivid.

Tablets have very little storage for video and are limited on RAM memory, but they have potential for use simply as a slave (a peripheral) to a far more powerful PC. Unfortunately tablets are not designed to be slaves to a PC. Tablets are discrete devices designed to operate as free standing units.

Tablets are equipped with a simple video camera which allow for limited shooting. However, the combination of camera and editor in one device allows for the user to quickly shoot and edit a video on the device. In the short run, this will change the way user gathered news is created. Every day, we see footage from mobile phones appearing on the TV News and



on news websites. Tablets allow for a more refined user-gathered news clip. This might not make news executives happy, but it may provide a faster and better story during breaking news provided by citizens on the scene, who are often there before news teams.

The tablet as a device is far more appealing to inexperienced video creators (including children). Since the inception of film editing, the process has become less costly and less complex, but the pace of simplification is now progressing at a dramatic rate. People who never imagined themselves as having any interest in making video will begin doing so. Perhaps most of this video created by such low-skilled people will be of little value, but some of it will likely be incredible.

Today there are just a few video editing apps on the market for tablets. In the future we'll see many more as their horsepower, speed and storage capacity increase. This will usher in a new wave of people editing videos who will bring with them their own unique video creativity. 

Matthew York is Videomaker's Publisher/Editor.



For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15384 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15384](http://www.videomaker.com/article/15384)

## Videomaker

Videomaker empowers people to make video in a way that inspires, encourages and equips for success. We do this by building a community of readers, web visitors, viewers, attendees and marketers.

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# Sony NEX-VG900 Professional Camcorder

## Full-Frame Interchangeable Lens Camcorder

by Mark Holder



Ever the trendsetters, Sony has gone and done it again. A couple years ago they graced us with the NEX-VG10, the “world’s first consumer interchangeable lens HD camcorder.” Until that time, DSLR cameras, with their numerous lens options, offered video producers creative choices that consumer camcorders just couldn’t compete with.

Another huge advantage long held

by DSLRs has been that of full-frame image capture. Sony has now shattered that barrier with the new NEX-VG900, calling it “the world’s first consumer 35mm full-frame interchangeable lens camcorder.”

### Design

Video producers driven to DSLR use because of their many lens choices and amazing images, but who miss the traditional camcorder look, feel and functionality will be delighted with the VG900. Though marketed as a consumer camcorder, the VG900 offers the best of both the camcorder and DSLR worlds, with enough of the right features to really aim for the prosumer.

Our tests used the SEL18200 (\$900), an 11X zoom, 18-200mm f/3.5-6.3 telephoto lens and a Carl Zeiss 16-35mm f/2.8 zoom lens. With both lenses the center of balance is too far forward for one-handed shooting and will cause considerable wrist fatigue rather quickly. The handle and lens adapter will feel comfortable though.

Alternatively, the size and form of the VG900 lends itself particularly well

to cradling in the palm of one hand at waist level. Support it with the other hand and tuck in your elbows and you’ll get some great, steady pans. But don’t pan too quickly though - as with all CMOS based cameras, rapid panning will result in some degree of rolling shutter issues. While the VG900 is specifically designed for use with E-mount lenses, one’s creative options increase greatly by making use of the included A-mount lens adapter.

To achieve stunning results, the VG900 employs a 24.3MP, full-frame, 35mm Exmor HD CMOS sensor. At 1.4-inchx0.9-inch (35.8mmx23.9mm), the sensor is more than twice the size of APS-C sensors and approximately 40 times larger than those found in standard consumer camcorders. Greater sensor real estate means more light is captured, which translates into all sorts of good things, such as better light sensitivity, shallower depth of field and more color data.

The VG900 has a healthy mix of on-screen menu options and readily accessible buttons for frequently needed features. Three dedicated buttons on the left side of the body between the lens mount and the LCD are control iris, gain/ISO and shutter speed. These three control the aspects of exposure,

### TECH SPECS

**Imaging Sensor:** 35mm full-frame Exmor HD CMOS sensor 1.4"x0.9" (35.8x23.9mm)

**APS-C Compatible Mode:** Yes (Auto/On/Off)

**Manual Focus Assist:** Magnified display; Peaking

**I/O:** Composite/Component/S-video out; Mini-USB; multi-interface accessory shoe; Mini HDMI; stereo headphone/mic jack, remote control

**Microphone/Speaker:** Built-in

**Mic Level Control:** Yes - 31 steps

**Wind Noise Reduction:** Yes

**Media:** Memory Stick PRO Duo; Pro-HG Duo; PRO-HG HX Duo; SD, SDHC, SDXC

**Viewfinder:** EVF; adjustable diopter; adjustable color temperature

**Gain Control:** Auto/Manual (0dB-30dB)

**ISO:** Auto/Manual (100 to 25600)

**Manual Exposure Assist:** Zebra Pattern Display

**White Balance:** Auto; One Push; Outdoor; Indoor; WB Temp

**Display:** 3.0" Xtra Fine LCD 270-degree

tilt, touch screen display with Histogram; Real-time image adjustment: Exposure compensation, WB

**Assignable Dial:** Exposure/Gain (ISO)/Iris/Shutter Speed/AE Shift/WB Temp

**Weight:** Approx. 1lb. 13oz. with supplied NP-FV70 battery

**Measurements:** Approx. 4 1/4" x 5 1/8" x 8 7/8"

**Power - Battery:** InfoLITHIUM with AccuPower Meter System (V Series) NP-FV70/FV100; AC adapter

and controlling them manually is part of what makes the VG900 a definitively better camera.

Depending on your needs you can switch instantly between automatic and manual settings simply by pressing the button of the desired function. When in manual mode, a small wheel at the bottom of the camcorder is used to adjust the settings. Just ahead of this wheel is the Manual button, a user-defined button that can be set to control exposure, auto exposure shift, white balance (WB) color temperature (in 100 degrees-Kelvin increments), WB B-A (Blue/Amber) or WB G-M (Green/Magenta).

Behind the LCD are several more very useful buttons. The Zebra button turns striping on or off, which gives a visual indication of the areas in your frame that are overexposed by displaying hash marks across the appropriate areas. In the menu you can adjust Zebra sensitivity between 70 and 100 + in increments of five. A peaking feature displays a stroke of color around the areas that are in focus and provides a much appreciated focus assist for older eyes. Go into the menu to select white, red or yellow and to vary the intensity level between lo, mid or hi. The Display button adds or removes information shown onscreen. White Balance displays a menu where

you can select between auto, outdoor, indoor, manual (in 100K increments) or one push - where you fill the frame with white, push the onscreen button and you’re all set.

On the right side of the unit is a zoom control for use with lenses having a built-in zoom motor, otherwise, the rocker controls the electronic zoom. Ahead of the zoom control is an Expanded Focus button, which magnifies the frame to further aid in achieving proper focus.

### Sound Advice

Topside is the built-in microphone which consists of four omnidirectional capsules that support either stereo or 5.1 surround sound recording. Levels are adjustable and may be monitored through headphones and visually, with the onscreen audio level meter. While the onboard mic does a respectable job, pros may want to step it up using the optional adapter kit, which includes a mono shotgun mic and two XLR connectors. The kit, and other accessories, attaches to the new Multi Interface Shoe.

### Performance

Having the full-frame advantage means you can utilize your lens’ full field of view, without the cropping that occurs on smaller-sensor

equipped cameras. Rather than having to get further away from your subject to get the composition you desire you can actually move in closer. Doing so allows you a shallower depth of field. Using de-focusing effects, you can more effectively direct your audience’s attention to precisely where you want it.

The VG900 captures beautiful, full HD 1080 video at frame rates of 24p, 60p and 60i. Additionally, you can capture uncompressed 4:2:2 video to an external device via the HDMI out. This is excellent for those who want to retain all that extra color information acquired through shooting full-frame, which translates into added flexibility in post, such as when color correcting, grading or keying. We’re gaining more freedom to shoot with the VG900 and welcoming every minute of it. **V**

For full-frame, 35mm image capture excellence and multiple lens options in a camcorder form factor, check out the NEX-VG900 from Sony.

Contributing Editor Mark Holder is a video producer and trainer.

For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15963 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15963](http://www.videomaker.com/article/15963)

# Adobe Creative Suite 6 Production Premium Advanced Editing Software

Part 2

## After Effects and friends

by Brian Peterson



In part two, looking at the new CS6 Production Premium, we will examine Adobe After Effects and touch on other programs commonly used in the second half of the production cycle including SpeedGrade, Media Encoder and Encore. We will not spend time reviewing the new pricing and subscription model or shared features that we already discussed, so be sure to check out part one of this review in

the October issue or go online at [www.videomaker.com/article/15509](http://www.videomaker.com/article/15509)

### After Effects CS6 - Fast Cache

Perhaps the biggest new feature in After Effects CS6 is its greatly improved responsiveness. Its Global Performance Cache includes a unique combination of a persistent disk cache, global RAM and graphics handling; you will no longer need to wait for a timeline to re-render all your layers in a preview just because you changed the properties in another layer. After Effects keeps meticulous track of each layer's rendered previews even so far as allowing you to move them to other compositions. After you've closed a project and come back to it later, persistent disk cache locates and loads the frames rendered from your previous session. You'll see a blue bar on your timeline indicating that After Effects found the rendered preview frames and is waiting for you to load them back into RAM by hitting the space bar or the zero key. Depending on the size of the files and speed of the disk you have assigned to serve as your disk cache, the reloading will be less than real-time but in all our tests it was between 15 and 20 frames per second; far faster than the initial rendering. CS6 Production Premium makes much more efficient use of the GPU

than in past versions. Adobe cites tests done by NVIDIA as performing certain types of tasks, such as playback of higher resolution formats and larger compositions, as being between 1.5 and 2.5 times faster. You can also now render compositions in the background, allowing you to continue working on other parts of your project. Even while background rendering an effect-heavy work area, we did not notice much of a hit to our real-time performance.

### AE: Seriously 3D

You now have a host of new 3D tools to turn 2D shapes and text into beveled, extruded objects and flat objects into curved surfaces. At the heart of this new capability is the ray-traced 3D rendering engine. For those of you familiar with dedicated 3D programs most of the new tools will be very familiar. If this is your first step into 3D, After Effects makes it painless. Not only can you now quickly give depth to your shapes and text, but you now have sophisticated material controls such as diffusion, transparency, reflection, refraction, specular, environmental mapping and many more. You can curve any 2D image in 3D space by tweaking the Geometry Options with controls for curvature and the number of segments. The greater the

Adobe Systems, Inc.  
[www.adobe.com](http://www.adobe.com)

#### STRENGTHS

- After Effects is simply fun to use
- Fast previews free your creativity and open up a new world of 3D
- SpeedGrade appears well engineered
- Other key applications received welcome improvements

#### WEAKNESSES

- Complicated new purchasing options
- New hardware may be necessary to get the best performance and speed

**\$1,900** Upgrades from: \$375-\$950

- Adobe Creative Cloud Membership:
- annual contract: \$50/mo.
  - monthly (no contract): \$75/mo.



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The world's most popular converters are now available in two families, for the studio or heavy duty for live outside broadcast! The new heavy duty models are machined from solid aluminum so they look beautiful and are super tough! There are 14 models including HDMI, analog, optical fiber, audio embedding/de-embedding and up, down, cross conversion. Mini Converters are even available as OpenGear cards for when you need a rack mount solution.

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#### Redundant SDI Input

Mini Converters feature a redundant input and loop through SDI output. Connect a redundant SDI cable to the second input, and if the main SDI input is lost, Mini Converters will automatically switch over in an instant. That's great for mission critical tasks such as live events.

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#### 3 Gb/s SDI Technology

Mini Converters include the latest 3 Gb/s SDI technology, so you're always future proofed! 3 Gb/s SDI is also fully compatible with all your existing standard definition and high definition SDI equipment.



#### Broadcast Quality

Mini Converters are built to the highest quality standards with low SDI jitter, so you get the longest SDI cable lengths combined with ultra low noise broadcast quality analog video and audio.

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Mini Converter SDI Distribution.....\$295	



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segment count, the smoother the curve up to a practical limit. But be careful when filling the program's plate, more segments eat up more CPU cycles. By using the ray-traced 3D renderer, you do give up some common 2D functions such as blending modes, layer styles and others, but After Effects will remind you of this with a handy alert when you select the ray-traced 3D render for the first time (and again each session if you choose).

The 3D camera tracker allows you to easily place objects such as text, shapes, nulls or images into 3D space. The key word here is *easily*. You have been able to do this before but only with a great deal of painstaking effort and even then, with only mixed results. Now you simply have After Effects automatically analyze your 2D footage. This step can take some time depending on the length and complexity of your footage but it does operate as a background process so you can continue to work on other elements. Once this step is complete you have a small constellation of points that, when hovering your pointer over them, give you various perspective plane targets on which you can place and parent your element. We experimented with a variety of footage types and found that the camera tracker gave us good 3D point options and solid tracking results each time.

### AE: Vectors to Shapes

Creating shapes from Illustrator CS6 vector layers is now a breeze. Just import a vector graphic, create a new composition, select Create Shapes from Vector Layer and you have a shape layer ready for animation. If you have a very complex Illustrator file, the calculations can take a while and some types of Illustrator information, such as gradients, may not import accurately. But we found all of our test imports imported and converted quickly and precisely.

### AE: Variable Mask Feather

Until now, you were limited with controls for X and Y-axis mask feath-

#### TECH SPECS

##### For PC:

- Intel Core2 Duo or AMD Phenom II processor; 64-bit support required
- Microsoft Windows 7 with Service Pack 1 (64 bit)
- 4GB of RAM (8GB recommended)
- 4GB hard-disk space for installation; additional free space required during installation (cannot install on removable flash storage devices)
- Additional disk space required for preview and working files (10GB recommended)
- 1280x900 display
- OpenGL 2.0-capable system
- 7200RPM hard drive (multiple fast disk drives, preferably RAID 0 configured, recommended)
- Sound card compatible with ASIO protocol or Microsoft Windows Driver Model
- Blu-ray/DVD-ROM drive compatible with dual-layer DVDs (DVD+/-R burner for burning DVDs; Blu-ray)
- QuickTime 7.6.6 software required for QuickTime features
- Optional: Adobe-certified GPU card for GPU-accelerated performance

##### For Mac OS:

- Multicore Intel processor with 64-bit support
- Mac OS X v10.6.8 or v10.7
- 4GB of RAM (8GB recommended)
- 4GB hard-disk space for installation; additional free space required during installation (cannot install on a volume that uses a case sensitive file system or on removable flash storage devices)
- Additional disk space required for preview files and other working files (10GB recommended)
- 1280x900 display
- 7200RPM hard drive (multiple fast disk drives, preferably RAID 0 configured, recommended)
- OpenGL 2.0-capable system
- Blu-ray/DVD-ROM drive compatible with dual-layer DVDs (DVD+/-R burner for burning DVDs; Blu-ray)
- QuickTime 7.6.6 software required for QuickTime features
- Optional: Adobe-certified GPU card for GPU-accelerated performance

#### TEST SYSTEM DETAILS:

OS: Windows 7 Ultimate 64-bit  
Motherboard: Tyan S2696  
CPU: Dual Intel Xeon Quad-core E5345 2.33 GHz processors

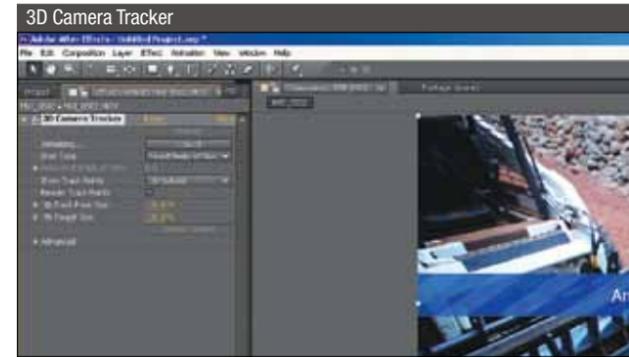
Overclocking: No  
RAM: 32GB DDR2-666  
Graphics card: NVIDIA GeForce GTX 285  
Video RAID: 8TB SATA RAID 0 10,000 RPM

ering. With the addition of the new Mask Feather tool, you have nearly limitless control of both the location and amount of mask feathering. By dragging on mask feather points away from the central axis of the mask, you increase the amount of feathering. By adding more, or by dragging points around the mask axis, you can dramatically change the location and shape of the mask feather. This provides a much-welcomed level of

control needed for creating professional composites.

### AE: New FX, New Fixes

There are 90 new or improved effects in After Effects and you now get the complete CycoreFX HD suite with 73 plug-ins all of which now have 16-bit per channel (bpc) support and 34 effects go even further with 32-bpc support. The increased effect bit depth will give you far more options for main-



taining nuanced color and brightness values for high quality source material.

There have been several third-party solutions to the "jello-effect" that plagues DSLR panning shots, but Adobe's rolling shutter fix works quite well and now comes as part of both After Effects and Adobe Premiere Pro CS6. The After Effects version is identical to the version in Premiere Pro so check out our previous analysis in article #15509. Warp Stabilizer is new since CS5 and does a great job stabilizing shaky footage. It is also a Premiere Pro effect and you can find our take on it in the same article.

### SpeedGrade

With SpeedGrade CS6, you get a very sophisticated color grading application with dedicated features found in high-end grading suites. Like most other CS6 applications, SpeedGrade is native 64-bit and takes advantage of GPU acceleration and features a 32-bit color processing engine called, Lumetri. This engine lets you work with HDR and RAW footage as well as working in either logarithmic or linear color spaces. If you have the desire, and cash, you can even control SpeedGrade with an external grading surface from a third-party company. The way the new toolset is arranged should be familiar to anyone that has done basic color correction but you really do need to read the manual to get a handle on the many control nuances.

SpeedGrade works non-destructively saving all color grading, mask and effect changes as a LOOK file so your source material remains unchanged. There are

various monitor options including vectorscope, waveform and histogram that update in real-time. You perform color and brightness adjustments to shadows, midtones and highlights using either sliders, numeric input or the more com-

mon color wheels. Handy reset buttons for each color wheel get you back to where you started if you get too crazy. By design, the SpeedGrade color wheels do very subtle adjustments even if you wildly move your mouse. Holding shift lets you make coarser adjustments.

Some of the more powerful features include color grading layers that work very much like adjustment layers. You can apply a color grade to a timeline track and have it adjust multiple clips equally even after having made individual clip adjustments. There are plenty of preset color samples to use as starting points for your own custom look along with filters and effects.

There is much more to this powerful new addition to the Adobe Production Premium suite, so it is worth your time to check out the website for details.

### Media Encoder

This little gem, also known as AME (Adobe Media Encoder), may not get the attention of its bigger siblings but it can make or break your final output. Adobe has made several noteworthy improvements for CS6. If you regularly output various formats of the same video, you'll be relieved to see the new watch folders that, once set up, let you render to various formats from the same video source. If you don't want to create a watch folder, you can load and encode multiple presets at the same time. AME has many new presets covering an expanded range of mobile devices and formats. Finding the right preset might be difficult if it were not for the new Presets Browser. This both organizes presets intuitively by type as

well as lets you search for the one you want. You also get a much better view of the status of the encoding process which, as before, still runs in the background letting you do other things.

### Encore

The big news for Encore CS6 is that it is now 64-bit native. This should provide some speed improvements in both processing and loading of assets as well as make the program more stable. This application opened nearly two seconds faster than the CS5 version and was able to load a 3.2GB MPEG-2 file in 34 seconds instead of the 57 it took CS5. During our tests we did not experience one hiccup; not like the somewhat regular cases with CS5. Other improvements include creating chapter playlists when authoring Blu-ray discs and an expanded Web DVD authoring tool set.

### Conclusion

After Effects has always been a powerful, feature-rich visual effects tool. But until now, it could frustrate you, making you wait for previews to give you the necessary feedback to make your next decision. That creative barrier is largely removed with CS6 and working in After Effects is more fun and inspiring than ever. SpeedGrade appears to be very powerful, but with this power, comes a bit of a learning curve. We think it will find a following and is worth investing the time to learn if you want to add that extra touch of Hollywood to your productions. And with even the humble Media Encoder getting some polish, the CS6 Production Premium suite is well worth the money. **I**

#### SUMMARY

After Effects and all of CS6 Production Premium's applications are well worth the upgrade price if you want to get the most out of your edit time.

Brian Peterson is a video production consultant, trainer, and lecturer.



For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15838 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15838](http://www.videomaker.com/article/15838)

# Sony NEX-FS700

## Professional Camcorder

### The NEXt Big Thing from Sony

by Adam Vesely

In 2011, Sony released the NEX-FS100 as its first small-bodied, large-sensor video camera for the professional market. Featuring interchangeable lenses and Sony's new Exmor Super35 sensor, this camera brought high-end features and performance together at an affordable price. This year Sony is upping the ante even more with the

Sony Electronics Inc.  
www.sony.com

#### STRENGTHS

- Razor sharp picture quality
- Impressive low-light performance
- Unbelievable slow-motion capture capabilities
- Lots of choices for lenses and accessories

#### WEAKNESSES

- Monitor placement inconvenient for some shot angles
- Built-in ND filters are great, but feel a bit fussy
- Attachable viewfinder can make focusing difficult

**\$9,200 (body only)**



NEX-FS700, featuring an improved 4K-ready sensor, super slow-motion, and several design improvements from last year's FS100.

#### Change Is Good ... Mostly

Even though the FS700 and FS100 look very similar, there are several key differences that give the FS700 an edge over last year's model as well as the competition. The FS700 packs a lot of new features into a body that is slightly larger than the FS100, yet looks and feels nearly identical in practice. One of the best new features are three built-in Neutral Density (ND) filters, alleviating the need to spend money and time buying and mounting external filters. The mechanism that controls the ND filter setting is a bit fussy to get set just right, but it is still a marked improvement over external ND filters. Another nice touch is the addition of a removable handle with two accessory shoes and several 1/4-inch and 3/8-inch mounting points for other accessories. The adjustable handgrip mounting point is more secure and an XLR port is closer to the front of the camera to make it easier to connect a mounted microphone. The button controls also now protrude

slightly higher above the body surface for improved tactile feedback.

The FS700 uses the same Sony E-mount for lenses as the FS100, but you can purchase adapters that allow you to attach other lenses from Sony, Canon, Nikon, and even large cinema Positive Lock (PL) mount lenses. The included 18-200mm F3.5-6.3 lens in our review kit has a solid build and produces sharp video and an amazingly shallow depth of field at the widest aperture. The bokeh this lens produces has a very soft and appealing nature, creating nearly perfect circles of color in the unfocused areas of the shot.

The 3.5-inch LCD touchscreen monitor on top of the FS700 flips upward and can be rotated 90 degrees to the right or left to allow viewing from the rear or either side of the camera. While we found the rotation feature helpful, the placement of the LCD monitor on the top of the camera body can make it difficult to see when the camera is mounted high above you. A viewfinder accessory is also included that attaches directly to the LCD monitor and magnifies the screen and cuts out unwanted light for better visibility in bright light. Although the screen was easier to see outside with

#### TECH SPECS

**Recording Media:** Memory Stick PRO Duo/SD, Flash Memory Unit (1 slot)

**Recording Format:** MPEG-4 AVCHD  
Compression: H.264 AVCHD (HD)/MPEG-2 PS (SD)

**Recording Format:** (28Mb/s) 4:2:0  
-1920x1080/60p, 50i; (17/24Mb/s)  
1920x1080/60i, 50i, 30p, 25p, 24p;  
(9/5Mb/s) 1440x1080/60i, 50i; 9Mb/s  
720x480/60i

**Image Sensor:** Exmor Super35 CMOS

**Video Effective Pixels:** approx.  
8,300,000 (HD)

**Focus:** Auto/Manual

**Iris/Gain Control:** Auto/Manual

**Shutter Speed:** Auto/Speed/Angle  
Minimum Shutter Speed: 1/10000 sec  
**Maximum Shutter Speed:** 1/4 sec (1/3  
sec at 24p)

**Lens Mount:** Sony E-mount

**Lens f-Stop:** F3.5-F6.3

**Focal Length:** 18-200mm

**Filter Diameter:** 2.6" (67mm)

**Image Stabilization:** Optical-Shift IS

**White Balance:** Auto, 3200K/5600K  
Presets, 2 Custom Value settings

**LCD Monitor:** 3.5" 920K pixels (16:9)

**Viewfinder:** LCD viewfinder attachment

**Progressive Scan:** Yes

**Video In:** No

**Video Out:** 3G HD/SD-SDI, HDMI,  
Component, Composite

**Other Connectors:** USB, Remote,  
XLR (2)

**Included Mic:** Sony ECM-XM1

**Mono/Stereo Recording:** Yes

**Microphone In:** Yes

**VU Meters:** Yes (on screen)

**Manual Audio Level Controls:** Yes

**Headphone Jack:** Yes

**Speaker:** Yes

**Photo Mode:** Yes, 16:9 8.1MP;

JPEG, (3:2) 7.1MP

**Photo Media:** Memory Stick PRO  
Duo/SD

**Memory Card Included:** No

**Wireless Remote:** Yes

**External Battery Charger**

**Provided:** Yes

**Battery Type:** Lithium Ion

**Onboard Video Light:** No

**Accessory Shoe:** Yes (two, non-  
powered)

**Dimensions:** (body only) 5"x4"x7  
5/8" (126.5x101.5x193.5mm)

**Weight:** 3.2lbs. (body only)

the viewfinder attached, we found this accessory made focusing more difficult due to the magnification of the LCD monitor, reducing its sharpness. Using the included peaking and zebra stripes settings are a must when working with a camera this sensitive to focus and light, and will help to get proper focus and exposure.

The FS700 has no built-in mic; instead Sony's ECM-XM1 microphone and a dual-shock absorbing microphone mount are included. There is an XLR port on the right side of the body near the mount point to make connecting your external mic more convenient, as well as a secondary

XLR port near the back for a second audio source.

#### Sometimes Slower Is Better

Sony's new 4K-ready Super35 sensor on the FS700 is capable of resolution greater than three times the FS100. This allows the use of heavy over-sampling to create images with impeccable detail and little to no aliasing along edges. While the FS700 currently captures 1080p footage in-camera, a future firmware update and a recording device to be released by Sony will allow capture of 4K resolution video using the 3G HD-SDI connector. Until this update becomes

available, the HD-SDI port can also be used to capture 1080p video with 8-bit 4:2:2 color. In addition to the HD-SDI port, HDMI, component, and composite ports are provided for external playback and capture as well.

One of the most exciting new features in the FS700 is the super slow-motion mode that allows you to capture as many as 240fps in full HD 1080p. Using 24p as the final frame rate, this means your playback is only moving at 1/10th of normal speed. If you're willing to step down to half or one quarter the resolution of 1080p, you can push the frame rate to 480fps or even an astonishing 960fps! The results are absolutely amazing to watch, and it is incredible how simply slowing a subject down this much makes something that is rather ordinary look truly extraordinary. The 480fps settings produced fantastic results without huge losses in detail, while the 960fps setting noticeably reduced the quality and clarity.

#### What a Deal!

When you look at everything you get with the FS700, it is an amazing value compared to some of the competition. Its low light performance, slow-motion capture, and overall picture quality is stunning. It has a few small design quirks, but those can easily be overlooked when you see everything you get in this camera kit for less than \$10,000. With the FS700, you can have everything you need now, plus the ability to shoot 4K in the future. **V**

#### SUMMARY

With features like super slow-motion, interchangeable lenses, and future 4K video capture, Sony has packed the NEX-FS700 with several highly desirable features at a highly desirable price point.

Adam Vesely is a Videographer/Director of Photography and Photographer.

For comments, email: editor@videomaker.com, use article #15517 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15517](http://www.videomaker.com/article/15517)

# Panasonic HX-WA2 Waterproof Camera



## Underwater Wonder?

by Mark Holder

Panasonic's HX-WA2 consumer camcorder allows users to shoot video in places few consumers have ever gone before, places like swimming pools, lakes and other bodies of water. The days of placing your camera in a dry fish tank and pushing it down into the water to get those cool underwater shots are gone. The HX-WA2 is submersible and able to get those shots without the fish tank – and without having to buy a separate waterproof enclosure.

Panasonic Corporation  
www.panasonic.com

### STRENGTHS

- Waterproof to 9.8ft. (3m)
- 5x optical zoom
- 2.6" articulating LCD display
- Full HD recording in both 60i and 30p
- Many features

### WEAKNESSES

- Buttons seem flimsy
- Some manual options are difficult to find and adjust accurately

\$280

### Design

Intended for stable, one-handed shooting with less fatigue, the HX-WA2 has a pistol grip design that fits the palm well and allows for a firm and comfortable grip. The camera has controls for zooming and recording within easy reach of the thumb. Although designed for right-hand use, we observed that it works fine for left-handed individuals as well if need be, leaving the one hand free for dog-paddling or side-of-pool grasping.

At the front of the camera is the built-in flash and a 5x optical zoom lens to either better or match other waterproof camcorders in this price range. It also has a 15x zoom setting, which uses Intelligent Zoom technology to enhance the zoom digitally, without degrading the image quality.

Light passing through the lens falls on a 1/2.33-inch, 14-megapixel CMOS sensor. The HX-WA2 records in full HD at either 60i or 30p using the MPEG-4 format. Other options include lower resolution progressive modes and a voice record mode for audio-only recording. Still photo options are plentiful with nine different sizes to choose from, options in either a 4:3 or 16:9 aspect ratio, a burst mode, four panorama modes, photo image stabili-

zation and a built-in flash.

The left side of the camera body houses the built-in speaker with the stereo microphone built into the back of the display. The flip-out LCD screen measures 2.6 inches. Especially handy for this type of camera is the articulating display, which tilts and turns as far as 285 degrees. Behind the display are four buttons: power on/off, menu, camera/playback/mode and Intelligent Auto.

The joystick sits at the back of the unit and is used for navigating the menu and making adjustments, zoom buttons, video record and photo shutter buttons, zoom range button, status indicator light and the port/bat-



### TECH SPECS

**Tough Design:** Waterproof 3m/9.8ft  
**Image Sensor:** 1/2.33" MOS Sensor  
**Total Pixels:** 14.4 Megapixels  
**F Value:** F3.5 (WIDE), F3.7 (TELE)  
**Optical Zoom:** 5x  
**Focal Length:** .3"-1.3" (6.8 - 34mm)  
**Monitor:** 2.6" wide LCD (230,400 dots)  
**Minimum Illumination:** 9lx (Scene mode off: 1/30), 3lx (Low Light Mode: 1/15)  
**Image Stabilizer:** Active E.I.S. (Electrical Image Stabilizer)  
**Focus:** Auto/Manual

**White Balance:** Auto/Manual (Sunny, Cloudy, Indoor1, Indoor2, Whiteset)  
**Shutter Speed:** Motion Image: 1/30 - 1/10000; Still Image: 1/2 - 1/1500  
**Iris:** Auto  
**Media:** SD/SDHC/SDXC Memory Card; Built-in memory  
**Recording Format:** MPEG-4 AVC/H.264  
**Recording/ Playback Mode:** 1920x1080 (60i or 30p); 1280 x 720 (60p or 30p); 640 x 480 (30p); 960 x 540 (30p)  
**Microphone:** 2ch stereo  
**Still Image Recording Format:** JPEG

**Power Supply:** DC3.7V (Battery) / 5.0V (USB)  
**Weight:** w/o Battery and SD Card approx. 0.5lb; with Battery and SD Card approx. 0.6lb  
**Dimensions (W x H x D):** approx. 3.7" x 5" x 1.7"  
**Interface:** AV output; micro HDMI; USB 2.0  
**Standard Accessories:** AC adaptor; rechargeable battery pack (min. 880 mAh / Lithium-Ion); AV Cable; USB Cable  
**Included Software:** HD Writer VE2.0

tery compartment. A cover lock and release switch is used in conjunction with a waterproof membrane beneath the port cover to keep water out. The HDMI Micro and mini-USB ports, battery and SD card slot are kept safe and dry here. Internal memory is present, but minimal, so you'll really want to use a separate media card of the SD/SDHC/SDXC variety.

No ports or controls exist on the top or the right side, but a tripod mount is located on the bottom. Did we mention that your choice of colors are blue or orange?

### Worthwhile or All Wet?

After a number of tests, both in and out of the water and under various lighting conditions, the HX-WA2 could be a worthwhile purchase, depending on one's intended use and tolerance for complexity. This model has quite a few features, more than most in its category. This can be a plus, but it also makes optimum operation more difficult to master than your typical grab-it-and-go camera. It does have manual focus and exposure options but their use is neither intuitive nor terribly accurate. Also, while it has two electronic image stabilization settings, neither results in any noticeable improvement

compared to not using them at all.

On the other hand, color reproduction, both in the water and out, is good, considering the price. It records with colors that

are rich and vibrant with excellent saturation. Low light performance on this camera is quite good as well, producing very little noise.

Of course, the standout feature is that the HX-WA2 is waterproof at a depth of 9.8 feet. After a couple hours of frolicking in the pool and drying ourselves, we found no water in the battery compartment whatsoever. Underwater images were realistic with good color and noise qualities. The ability to go



in and out of the water, without putting the camera in separate housing, is a plus. Being designed almost entirely for handheld use, the HX-WA2 is not designed to be a sports or adventure cam. If you want something to strap to your surfboard, you'll want to look elsewhere. ■

If you're looking for a small camcorder, with lots of features, that you can take with you next time someone tells you to go jump in the lake, then the HX-WA2 may be just what the mermaid ordered.

Contributing Editor Mark Holder is a video producer and trainer.

For comments, email: editor@videomaker.com, use article #15488 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15488](http://www.videomaker.com/article/15488)

# indiSYSTEM AIRjib and AIRjibXL Advanced Support



## Taking Video to New Heights

by Mark Holder

It's truly amazing to see the wealth of innovation that is coming to the aid of the mobile video producer these days. When it used to require a truckload of equipment and numerous bodies, today's video crew of one or two can pack in everything they need to the remotest of locations and come away with footage previously thought impossible.

Where a nice dolly shot once required a wheeled cart and track, someone eventually thought, "Hmmm. What if we put some sort of sliding rails on a tripod?" And the very compact, extremely effective, slider dolly was born. In the same way the slider

dolly brought innovation, compactness and mobility to horizontal movement, the folks at indiSYSTEM are bringing it to the vertical realm with their AIRjib and AIRjibXL jib arms.

### Built for Action

Oftentimes compromises must be made when bringing innovation to market - particularly in the areas of size, weight and price. All three can be reduced and usually at the expense of strength and quality. Specialized materials, such as carbon fiber or titanium, may be used to maintain these attributes but at the cost of affordability. Indeed, indiSYSTEM has managed to achieve compact size and portable weight, as well as retain strength and quality.

Constructed almost entirely of aluminum, the AIRjib and AIRjibXL are sturdy, lightweight and easy to setup, and they look good to boot. The round tubing and counterweight locking bar components retain their natural silvery aluminum appearance, while the rest is painted flat black.

The base of the unit contains two 1/4-inch and one 3/8-inch threaded holes for versatility in mounting options. Your tripod's quick release mounting plate attaches nicely to the base for easy mounting. Near home, you'll want to use a larger tripod for

maximum stability. If you're backpacking into some remote location, however, you'll likely opt for the lightest tripod possible. In this case, be sure to stabilize it properly and be careful of uneven terrain. By the way, the AIRjib is great for backpacking - it weighs six pounds and folds down to 26-inches.

Rising above the base are two aluminum plates to which the jib arms attach. Each plate has a 1/4-inch threaded hole to accommodate the included ball head mount and arm assembly. The assembly consists of a six-inch aluminum rod threaded onto a small ball head mount, creating the perfect perch for a monitor.

The jib arms consist of two lengths of square aluminum tubing, slotted along one side and two lengths of round tubing. The round tubing slides back and forth inside the square pieces to adjust the length of the boom arm. Once the desired length is set, locking knobs, extending through the slot and into the round pieces, are tightened, locking the pieces into position.

Another pair of upright aluminum plates attaches to the ends of the round tubing to elevate and secure the camera-mounting platform. The included quick release plate latches to the base of your camera and locks it in place on the bubble level-equipped platform.

### TECH SPECS

**Weight:** AIRjib - 6lbs.; AIRjibXL - 9lbs.  
**Capacity:** AIRjib - 8lbs.; AIRjibXL - 9lbs.  
**2L Bottle Carrier:** Max counter weight 4 liters (8.8lbs.) - both models  
**Dimensions:** AIRjib - 26"x 8"x 3" (collapsed); 44"x 8"x 3" (fully extended)  
 AIRjibXL - 36"x 8"x 3" (collapsed); 62"x 8"x 3" (fully extended)

**Maximum Camera Height:** AIRjib - 7' 2"; AIRjibXL - 10' 1" - (based on standard tripod height of 40")  
**Camera Quick Release Plate:** Included - both models  
**Ball Head Mount Assembly:** Included - both models

At the opposite end of the jib is the counterweight attachment point. A length of round tubing, inserted into the back of the upper arm, is locked into place. At the far end of the tubing is an L-shaped aluminum plate with three slots cut into it - each just the right size to accommodate the neck of a typical plastic bottle. A locking bar swings out of the way to allow the use of two bottles as big as two-liters for easily variable counterweights. Traditional weights may work just as well.

AIRjib counterweight assembly



### Up, Up and Away

Using the AIRjib is a joy and its small size and weight makes transportation a breeze. If you're a videographer-hiker, you're packing a lightweight tripod and small camera already. Adding the AIRjib will barely be noticeable compared to the increased awesomeness of your work.

Like the plastic bottle counterweights, the AIRjib comes in more than one flavor: the AIRjib and AIRjibXL. The AIRjibXL is a bit larger, allowing it to achieve a maximum height of more than 10 feet while only weighing an additional three pounds and requiring another 10-inches of carrying space. Please note that care must be taken when handling the camera end of the jib. As the arm is lowered, the two arms can become flush and your fingers could get pinched.

The motion the AIRjib allows still depends on technique, and many old rules apply - do anything that can smooth out your application of movement. Also note, lateral movement is only as good as the pan capability with your tripod.

Setup of either model takes mere minutes. Attach the tripod quick release plate to the base of the jib then to the stabilized tripod. Release the boom arm locking knobs, adjust the lengths, and lock in place. Attach the jib's quick release plate to camera, then camera to platform. Slide counterweight assembly into rear of upper jib arm and lock into place. Attach plastic bottles or other weights to properly counterbalance camera. Setup the optional remote monitor if desired. Shoot awesome video. 📺

### SUMMARY

Take your video to new heights, at a price you can afford, with indiSYSTEM's lightweight and portable, AIRjib and AIRjibXL.

Contributing Editor Mark Holder is a video producer and trainer.



For comments, email: editor@videomaker.com, use article #15477 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15477](http://www.videomaker.com/article/15477)

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# Roland Systems Group R-26 Portable Audio Recorder

## 6-Channels of Quality Audio Versatility

by Mark Holder



Today's emphasis on small video recording devices, such as cell phones and ultra-compact camcorders, has resulted in a great deal of disappointment for those individuals seeking quality audio to accompany their stellar video creations. Particularly, with professional Digital Single Lens Reflex cameras, for which audio quality is notoriously poor. Producers are constantly on the lookout for devices that offer the portability, convenience and quality they require.

Roland's attempt to come to the rescue with the Roland R-26 portable audio recorder may well be a valiant effort indeed. The R-26 is reasonably priced and has a ton of

professional features and delivers admirably on quality.

### Checkin' It Out

Right out of the box the R-26 looks as though it would serve as a great sci-fi prop in an indie film; sort of like a sophisticated tricorder or phaser device. It comes with an owner's manual, AC adapter and power cord, mini-B USB cable, foam windscreen, Cakewalk Sonar LE audio editing software for Windows and a 2GB SD card. Now don't get carried away and format the card right off the bat, as it contains the device drivers needed to link the R-26 to your computer.

The build quality seems very good, which is constructed primarily of black plastic and it appears to be quite solid, with no excessive play around the dials or buttons. The four microphones do exhibit a bit of side-to-side flex and would sustain damage if dropped. The left side of the unit has a hinged rubber cover to protect the card slot and USB port. Near this are the dual-purpose Hold/Power button and AC-in port. The right side of the device has a built-in speaker, 1/8-inch (3.5mm) headphone jack and volume control for monitoring input, as well

as an 1/8-inch stereo mic jack with plug-in power.

For professional mic input, the bottom of the R-26 houses two XLR/TRS combo-type inputs while four internal mics adorn the opposite end of the unit. These are a pair of X and Y mics in the center, positioned along the same axis to minimize phase problems and deliver clear, directional, stereo recordings. The omnidirectional mics are positioned on the outside of the X/Y mics for greater distance between the two, in order to achieve a broader stereo feel. These mics pick



### TECH SPECS

**Tracks:** 6 (3 stereo pairs)

**Signal Processing:** AD/DA conversion: 24 bits, 96/88.2/48/44.1kHz

**Recording:** [Sample rate, bit depth] WAVE/BWF; 96/88.2/48/44.1kHz, 24/16 bits  
MP3 (MPEG-1 Audio Layer 3); 8/44.1kHz, 320/160/128 kbps; WAVE + MP3; 48/44.1kHz, 16 bits, Bit Rates: 128 kbps

**Playback:** WAVE; 96/88.2/48/44.1kHz, 24/16 bits;  
MP3 (MPEG-1 Audio Layer 3); 48/44.1kHz, 32-320 kbps or VBR (Variable Bit Rate)

**Memory Card:** SD Card (SDHC format compatible)

**Mic Inputs:** Internal Stereo Microphones: L/R Omnidirectional mics; Directional X/Y mic; Analog inputs: XLR/TRS Combo type (2) XLR - phantom powered; 1/4" TRS phone type - balanced/unbalanced; Plug-in powered mic input 1/8" (3.5mm stereo)

**Audio Output:** 1/8" (3.5mm) stereo headphone jack

**USB Interface:** Hi-Speed, Mini-B type

**Display:** 160x160 dots touchscreen

**Dimensions:** 3 1/4"W x 7 1/8"D x 1 5/8"H

**Weight:** 14oz.

up sound from all sides.

Sound from these input sources can be recorded simultaneously into three stereo tracks for six channels of quality audio and maximum versatility. This means that you can choose your favorite of the three tracks or custom mix them to taste in post.

The front of the R-26 has a large, grayscale, backlit touch screen display for viewing input levels and selecting menu options. Below are two large rotary dials for fine-tuning levels. Between them are a peaking indicator and button used to adjust mic sensitivity. Below these are file navigation buttons, Previous, Next, Play/Pause and Stop, as well as Menu and Record.

Pressing Menu reveals a number of setup and management options. Finder lets you browse recorded files then perform various operations such as select, copy, move, delete, edit or rename. You can record a memo along with your files or quickly convert them to MP3. The Recorder Setup menu lets you select the number of channels and source inputs you want

to record with, the sample rate (up to 96kHz) and the recording format (16 or 24-bit WAV). The Input Setup menu lets you select Limiter, Low-cut Frequency and power options for the different mic configurations. Low-cut options are 100, 200 and 400Hz. For true low-cut capabilities though, a lower frequency option should be included. Many other menu options and settings are available.

The main viewing screen has tabs for additional control. INFO displays information about the current file. MON turns monitoring on or off and allows for levels adjustments. MARK lets you split the track, and add or clear track markers. A-B SPEED enables track looping and playback speed alterations.

### Performance

Highly intuitive, the R-26 is both a joy and a breeze to use. Press the Menu button, then Rec Setup to select the number of channels and input sources you wish to record with. Press the Menu button twice to take you back to the main screen. Now push the SENS button



to set the microphone sensitivity. Point the mic at the sound source and adjust the sensitivity manually or automatically. For manual, adjust the touch screen to set the sensitivity slider to Low, Mid or High, then fine-tune using the input dials. The PEAK LED will alert you if you're too hot so you can back it off as needed. AUTO SENS samples the input for highs and lows and displays a recommended level you can then dial into. All that remains is to record.

Handling noise is definitely an issue with this device. Once you're recording, you'll want to keep your hands and everything else from touching it. Results differ, of course, depending on which mics you; however, we were quite pleased with the overall depth and quality. While mic noise was present to varying degrees, it wasn't excessive and was better than many other recorders we've tested.

### SUMMARY

Six-channels of quality audio, a variety of input types and a reasonable price make the Roland R-26 a strong contender in today's portable audio recorder market.

Contributing Editor Mark Holder is a video producer and trainer.

For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15519 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15519](http://www.videomaker.com/article/15519)

Roland Systems Group  
[www.rolandsystemsgroup.com](http://www.rolandsystemsgroup.com)

### STRENGTHS

- Intuitive interface
- Six-channel recording
- Professional inputs and features
- SD card included

### WEAKNESSES

- Low-cut option below 100Hz should be included

\$599

# Buffalo Technology AirStation AC1300/ N900 Gigabit Dual Band Wireless Router WZR-D1800H

## Extreme Performance

by Colin Marks



Having the ability to store and gain access to files, quickly and efficiently, is critically important in any media based workflow. In a networked environment, particularly one that includes wireless communications, faster, more secure connections are highly sought after. Buffalo Technology comes to the rescue with their first-to-market, extreme performance router, taking advantage of the new 802.11ac super high-speed wireless standard.

Buffalo Technology (USA)  
www.buffalotech.com

**STRENGTHS**

- New 802.11ac standard
- Wireless speeds approaching 1.3Gb/s
- Simultaneous dual band operation
- Compatible with existing devices
- Affordable

**WEAKNESSES**

- Provided stand is not dependable

\$180

**Standards: Made to be Broken**

The key difference between the 802.11ac standard and those that came before is speed. The technical name, 802.11ac, also referred to as 5G Wi-Fi, is fast, very fast – more than three times faster than the most recent 802.11n, or Wireless-N. Just compare the maximum speeds of .3Gb/s to 1.3Gb/s! As with previous standards, the newest one is tiered, with bandwidth based on the number of streams. Single-stream connections run at 450Mb/s with dual-stream at 900Mb/s and three-stream connections running at 1.3Gb/s. Each stream is about three times that of the Wireless-N standard.

Another difference between the two standards is that 802.11ac operates in the 5GHz space rather than 2.4GHz. With 802.11ac, you may support 80MHz in channel width - four times that of the previous standard.

Finally, 802.11ac is backward compatible with Wireless-N, and therefore, with the previous standards A, B and G as well. This means that existing client devices will connect to routers using the new standard and still function as they always have. Likewise,

clients based on the new 802.11ac standard will connect to function just fine with an existing Wireless-N router. In order to take advantage of the faster speeds attainable under the new standard, however, both devices must be based on 802.11ac.

**Airing Out the AirStation**

Upon opening the box, we find the router itself, the power supply, a two-piece base, a length of RJ-45 (network/Ethernet) cable, setup documentation and a CD containing the product manual and Air Navigator client utility software.



**TECH SPECS**

**WIRELESS LAN INTERFACE**

**Standards Compliance:** IEEE802.11ac (Draft 2.0)/n/a/g/b  
**Frequency Range:** Concurrent dual band 2.4 GHz / 5 GHz support  
**Wireless Security:** WPA2-PSK (AES, TKIP), WPA-PSK (AES, TKIP), 128/64-bit WEP

**WIRED LAN INTERFACE**

**Standard Compliance:** IEEE802.3/3u/3ab  
**Speed and Flow Control:** 10/100/1000 Mb/s (Auto Sensing)  
**LAN Ports:** RJ-45 Auto MDIX (4)

**WAN Port(s):** RJ-45 Auto MDIX

**OTHER**

**Dimensions:** 8.4"x7.2"x1.3"  
**Weight:** 18oz.  
**Power Supply:** External AC 100-240V Universal 50/60Hz  
**Power Consumption:** 11.4W (Max)  
**USB Port:** USB 2.0 - Supports NAS function and print server  
**Setup Utility Support:** Windows 7 (32/64-bit), Vista (32/64-bit), XP; Mac OS X 10.4-10.7

The front of the device has a button labeled AOSS (AirStation One-Touch Secure System) and four status lights. The AOSS button assists in making the connection between the router and another Buffalo AOSS-enabled device. It assists in connecting with WPS devices as well. The uppermost LED indicates the status of the wireless connection, the middle light shows whether Internet access is available or unavailable and the bottom LED indi-

cates whether router functionality is enabled. The last status indicator is at the bottom, behind the Buffalo name. This light shows whether power is on or off, and blinks to indicate various errors or other conditions that may have occurred.

The back of the device houses the router on/off/mode button, a USB port for connecting a USB drive, an eject button to dismount said drive, four 10/100/1000 Mb/s LAN ports and one 10/100/1000 Mb/s Internet port. Also at the rear are LEDs indicating the connection status of the USB, LAN and Internet ports, the power on/off button and the DC connector.

Along the underside is a reset button and slot containing the device's setup card with all the information necessary to get everything up and running. The two-piece base is too narrow to provide a truly stable vertical configuration, so mounting it for horizontal placement is highly recommended if your space allows for it.

The packaging indicates that the AirStation WZR-D1800H is an AC1300/N900 dual band router. The AC1300, of course, refers to the AC standard with its 1300Mb/s ceiling. N900 dual band refers to the fact that this is a true dual band router. It supports two bands of 450Mbps



Wireless-N in the 2.4GHz range or one band at 2.4GHz 450Mbps and one of as much as 1.3Gbps in the 5GHz space - simultaneously. In order to provide total backward compatibility, Buffalo combined a 2.4GHz 3x3 802.11n radio and the new 802.11ac technology in the same unit.

**Get Up and Go**

To accurately test and truly see the benefits of an 802.11ac router, one must use an 802.11ac client. We used Buffalo's AirStation AC1300/N450 4-Port Gigabit Dual Band Wireless Ethernet Bridge WLI-H4-D1300. The bridge connects to the router via the AC standard and shares that connection with as many as four Ethernet devices. Using the setup wizard and AOSS connection, setting the two devices up was relatively simple and uneventful. Our existing wireless devices connected to the new network easily and functioned as they had previously. Devices connected through the bridge, however, saw marked increases in speed, with three computers streaming HD content from the Web effortlessly.

Whether you're ready to jump on the gigabit bandwagon immediately or just want to future proof your network in anticipation of the onslaught of 5G Wi-Fi devices that are certainly headed our way, then the AirStation AC1300/N900 router may be the device for you. Faster speeds never hurt and your existing client devices will continue to work just fine.

**SUMMARY**

If you're ready to take your wireless network into the next frontier, Buffalo's AirStation AC1300/N900 dual band router will take you there at warp speed.

Colin Marks is a Video Producer and Trainer.

For comments, email: editor@videomaker.com, use article #15515 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15515](http://www.videomaker.com/article/15515)

# Microphone

## buyer's guide

BY TERESA ECHAZABAL

Before you go shopping for a microphone, you need to know, among other things, what type of applications you will be using it for. Will you be doing interviews, voice overs, weddings, or documentaries? The answer to these questions will help you choose the right mic. Once you've determined what you'll be using it for, you will need to decide how much you'll want to spend.

### Getting the Mic Off the Camera

External mics can turn an ordinary video production into one that is colorful and dramatic. Many people take sound for granted, not realizing that there is an easy way to improve it. Mics that don't live within the camera will do that. By putting them closer to the subject rather than close to the camera allows you to capture a better quality sound, giving you a richer video experience.

The three main types of external mics are the *shotgun*, the *lavalier* and the *handheld*. Each is suited for a different kind of application. Shotgun mics are often mounted onto your camcorder or attached to a boom pole. They will normally pick up all sound coming from the direction in which the mic is pointed. The Sennheiser MKH 8060 shotgun mic is a lightweight yet rugged shotgun mic that can withstand tough climates. It has a super-cardioid pickup pattern and runs \$1,250.

Lavalier, or lav mics are used mostly for video interviews or if you have someone talking and don't want the mic to be seen. You attach them to the talent's clothing to record the person's voice very clearly. The RØDE Lavalier mic (\$375) has an omni-directional polar pattern and condenser element. It works best for general sound pickups, such as interviews, presentations and instruction. It comes with a handy protective storage case, waterproof pop-filter, wind-muff and clip.

Handheld mics are the most durable of all three and are often used by reporters or during casual interviews. Audio-Technica's AE6100 (\$299) dynamic handheld mic delivers a clean, crisp sound. Its hyper-cardioid pattern provides excellent isolation of the desired sound source. ▶▶

One way to dramatically increase the quality of your video productions is by using an external microphone rather than the one that is built into your camcorder. You will be able to get your mic closer to your talent and capture the sharpest, clearest sound possible.

Manufacturer	Website	Condenser/Handheld	Handheld	Lavalier	Shotgun	Wireless	USB	Headworn	Boundary/Podium (musical)	Instrument/Studio
ACOUSTIC ENGINEERING BUREAU/dBTechnologies	www.dbtechnologies.com	•	•			•		•		
ADK	www.adkmic.com	•	•							•
AKG Acoustics Inc.	www.akg.com	•	•	•	•	•	•	•	•	•
AmpliVox Sound Systems	www.ampli.com	•	•	•	•			•	•	•
APEX Electronics USA	www.apexelectronics.com	•	•		•		•	•	•	•
Applied Microphone Technology	www.appliedmicrophone.com	•			•	•				•
Audio Engineering Associates	www.wesdooley.com	•	•		•					•
Audio-Technica	www.audio-technica.com	•	•	•	•	•		•	•	•
Audix	www.audixusa.com	•	•	•	•	•		•	•	•
Avlex Corporation	www.avlex.com	•	•	•	•	•		•	•	•
Azden Corporation	www.azdencorp.com		•	•	•			•	•	
beyerdynamic	www.beyerdynamic.com	•	•	•	•	•	•	•	•	•
Blue Microphones	www.bluemic.com	•	•		•		•	•		•
Bosch Security Systems, Inc.	www.telex.com		•		•	•		•		
CAD Audio	www.cadaudio.com	•	•				•		•	•
Canon Inc.	www.canon.com									
Carvin Corporation	www.carvin.com	•	•	•	•	•		•		•
Cascade Microphones	www.cascademicrophones.com	•	•							•
Coby Electronics Corp.	www.cobyusa.com		•					•		
Countryman Associates, Inc.	www.countryman.com			•		•		•	•	
Creative Technology Ltd.	www.creativelabs.com								•	
Eartec Co.	www.eartec.com			•	•			•		
Fender Musical Instruments Corporation	www.fenderaudio.com		•	•		•		•		
Heil Sound, Ltd.	www.heilsound.com		•			•		•		•
Holophone	www.holophone.com		•						•	•
KEL Audio Inc.	www.kelaudio.com	•								•
Kingdom, Inc.	www.kingdom.com	•	•					•	•	•
Lauten Audio	www.lautenaudio.com	•								•
Lectrosonics, Inc.	www.lectrosonics.com		•	•		•		•		
Logitech	www.logitech.com					•	•	•		
Martel Electronics	www.martelelectronics.com	•	•	•		•	•	•	•	
M-Audio	www.m-audio.com	•	•							•
Microtech Gefell GmbH	www.microtechgefell.com	•								•
Mojave Audio	www.mojaveaudio.com	•			•					•
Nady Systems Inc.	www.nady.com	•	•	•	•	•	•	•	•	•
Neumann	www.neumann.com	•	•	•	•	•		•	•	•
Peavey Electronics	www.peavey.com	•	•	•				•	•	•
Professional Sound Corporation	www.professionalsound.com			•				•		
Provider Series LLC	www.providerseries.com			•				•		
Que Audio	www.queaudio.com	•	•	•				•		
RØDE Microphones	www.rodemic.com	•	•	•	•	•	•	•	•	•
Roland Corporation	www.roland.com	•	•							•
Sabine	www.sabine.com			•		•		•	•	•
Samson Technologies Inc.	www.samsontech.com	•	•	•			•	•	•	•
Sanken Microphone Co., Ltd.	www.sanken-mic.com	•	•	•				•	•	•
Schoeps GmbH	www.schoeps.de	•	•	•				•	•	•
Sennheiser	www.sennheiser.com	•	•	•	•	•	•	•	•	•
Shure Incorporated	www.shure.com	•	•	•	•	•	•	•	•	•
SIMA Products Corporation	www.simaproducts.com			•		•				
Sonictronics and Omnisonic International Ltd.	www.sontronics.com	•	•							•
Sony Electronics Inc.	www.sony.com	•	•		•				•	
TELEFUNKEN Elektroakustik	www.telefunken-elektroakustik.com	•	•	•						•
VFGadgets	www.vfgadgets.com								•	
Violet Design/FDW Corp	www.violetusa.com	•	•		•					•

## Balanced and Unbalanced

Most mics on the market today have a balanced output. What is balanced? Balanced means that inside such mic cables there are three wires. One is positive, one is negative and the third is grounded. There are transformers at the ends of the cable that will convert the three into a normal signal. This allows for the use of longer cable runs that are less susceptible to interference. An unbalanced cable simply has an audio signal and a grounded wire. Unbalanced is more susceptible to extraneous noises but if your cable is 10 feet or less in length, you should do fine. The Azden SGM-2X shotgun mic provides a low-noise signal through its balanced XLR output for \$320. While the Shure WH20 Dynamic headset mic (\$95) is tailored to users that must move around, and it can clip audio before distortion occurs.

## Mic Element

Another factor to consider when purchasing a mic is the element. There are three main types: condenser, dynamic and pressure zone or PZM. Many mics you'll consider are condenser. They are very sensitive to sound and tend to be fragile, and so require careful handling. Some condenser mics are for studio use only but their sound reproduction allows you to achieve the best quality sound. Azden's SMX-20 (\$200) is a stereo electret condenser mic that offers a directional high quality stereo sound. It is designed to work with DSLR cameras, but has a shoe that will fit most camcorders as well.

Dynamic mics are less fragile. They do a good job in varying climates and have the ability to pick up a wide range of sounds. They are mostly used outdoors because of their ruggedness. Another Azden mic is the WM/T-PRO VHF Wireless Microphone (\$180). It has a transmitter built in and has a rubberized coating for reduced handling noise.

Pressure zone mics, or PZMs, work in a different way. They are made up of a tiny mic element that is placed just a few millimeters above the hard surface of the mic. This type of mic responds well to sound that reflects off the surface. They are great for recording quality sound minus ex-

traneous, ambient noise. The Crown PZM-11LLWR mic (\$225) is a weather-resistant pressure zone microphone with a balanced output. It is designed to be mounted on a typical electrical outlet. The mounting style and need for power should be enough to keep its uses to very specialized needs such as outdoor intercoms.

## Pick Up Pattern

Another feature you need to know about when purchasing a mic is its pickup pattern. The pickup pattern determines the sound pattern and from which direction the mic captures sound.

Omni-directional mics pick up equal amounts of sounds from different directions. A directional mic will pick up sounds from its front. The goal is to isolate the sound you want while keeping out ambient noises. Directional mics come in three more categories, cardioid, super-cardioid and hyper-cardioid, each picking up sound in front of the mic narrower than the next. The shotgun mic is the most directional of all mics with the tightest pickup pattern in front of the mic.

The ME 62 (\$160) by Sennheiser is an omni-directional mic that can capture great room tone and ambient noise. The RØDE NTG1 (\$349) con-

**WIRED SHOTGUN MICS ARE ONE PIECE OF EQUIPMENT THAT NO VIDEO ENTHUSIAST SHOULD BE WITHOUT.**

denser shotgun mic is lightweight and designed for professional applications in the film, video and TV industries.

## Frequency Response

The frequency response of a mic is a range between two figures. It is a way to know what frequencies a mic can capture. For example, a mic that has a frequency response of 20Hz to 20kHz can reproduce all frequencies within that range. There are mics that do not alter frequency at all. This flat response means it is sensitive to all frequencies equally. Condenser mics in general have a greater range of frequency response than dynamic mics.



Shure Incorporated  
www.shure.com

Blue Microphones  
www.bluemic.com

Samson Technologies Inc.  
www.samsontech.com

beyerdynamic  
www.beyerdynamic.com

## Wired or Wireless

A wired mic is physically connected to the recording source, usually your camcorder, by way of a cable. In contrast, a wireless mic does not connect directly to your source. It consists of three parts: a transmitter, a receiver, and the mic itself, then there may be wires between the mic and the transmitter and between the receiver and your recording device. Deciding which one to use depends on factors that are largely application-specific as well as your own personal preference.

## Wired

A wired mic does not transmit a signal, therefore it is less likely to pick up extra noises and interference. Because they are more common than wireless mics, they are usually less

## Wireless

On the other hand, wireless mics allow you to receive very good audio quality in a wide shot because the mic is not connected to the camera. However, the disadvantages are that they are susceptible to picking up interference and, because they are generally attached to the talent's clothing, they may also pick up the rustling of his/her clothes. Audio-Technica's 1800 Series camera-mounted wireless mics are very versatile and easy-to-use portable wireless mics. They come in dual-channel and single-channel systems and its True Diversity operation allows for resistance to interference and dropouts. Because there are advantages and disadvantages to both wired and wireless mics, it makes sense to have one of each plugged into separate audio channels on your camera or recorder.

While there are many factors to consider when purchasing a mic, your main concern when deciding which one to get is what applications you will be using the mic for and also how much money you are willing to spend. The market is flooded with a wide variety of solid, top-quality mics, for many different applications, ranging in price from \$50 (or less) to \$1,200 (and more). The choice is yours, and if you carefully consider all the factors, applications and prices of mics that are out there, you will likely make the right choice. The bottom line is, you can't go wrong with a good, solid, external mic in addition to the one already included in your camera. **V**

Teresa Echazabal is a freelance video editor, writer, and producer.

For comments, email: editor@videomaker.com, use article #15346 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15346](http://www.videomaker.com/article/15346)

# Audio Editing Buyer's Guide Software



PreSonus Audio Electronics, Inc.  
[www.presonus.com](http://www.presonus.com)

Avid Technology, Inc.  
[www.avid.com](http://www.avid.com)



Ableton AG  
[www.ableton.com](http://www.ableton.com)

Audio has always taken a back-seat to video in the consumer's mind – in fact, people did not care that the very first movies were silent because they had *moving pictures* to watch.

BY MARSHAL M. ROSENTHAL

As anyone who has ever watched a horror film with the sound turned off knows, it is audio that adds the atmosphere to the movie. But for the audio to be properly integrated into the video, audio editing is required.

While the days of recording on tape are gone for many, the same difficulties suffered by analog recording technologies still exist, ranging from multiple microphones that have to be mixed together, bad acoustics that can't be modified on-location and even various environmental sounds that sneak their way into the recordings. While the ability to record digitally offers many advantages over analog, there are problems that are still likely to occur, thanks to Murphy's law.

Prerecorded materials, meanwhile, also bring

## Audio Editing Software Manufacturer Listing 2012

Ableton AG  
www.ableton.com

Acoustica  
www.acoustica.com

Adobe Systems Incorporated  
www.adobe.com

Apple Inc  
www.apple.com

Audacity  
www.audacity.sourceforge.net

Avid Technology, Inc.  
www.avid.com

Blaze Audio  
www.blazeaudio.com

Cakewalk, Inc.  
www.cakewalk.com

Metadecks Project, Conrad Parker  
www.metadecks.org

DanDans Digital Media  
www.dandans.com

DVDVideoSoft Limited  
www.dvdvideosoft.com

FlexiMusic  
www.fleximusic.com

GoldWave  
www.goldwave.com

Image-Line Software  
www.image-line.com

Jokosher  
www.jokosher.org

Kreatives.org  
www.kreatives.org

MAGIX  
www.magix.com

MEFMedia Systems Co.  
www.music-editor.net

Merging Technologies  
www.merging.com

MightSoft Co., Ltd.  
www.audioeditorpro.com

MOTU  
www.motu.com

Mystik Media  
www.blazemp.com

NCH Software  
www.nch.com.au

Online Media Technologies Ltd.  
www.avs4you.com

PowerSE Co. Ltd.  
www.free-sound-editor.com

PreSonus Audio Electronics, Inc.  
www.presonus.com

Prism Media Products Limited  
www.sadie.com

Rogue Amoeba Software, LLC  
www.rogueamoeba.com

Sion Software  
www.sionsoft.com

Sonic Studio LLC  
www.sonicstudio.com

Sony Creative Software  
www.sonycreativesoftware.com

Steinberg Media Technologies GmbH  
www.steinberg.net

Traverso DAW  
www.traverso-daw.org

Wave Editor  
www.wave-editor.com

Wavosaur  
www.wavosaur.com

Zynewave  
www.zynewave.com

Compiled by Jackson Wong

problems that need to be dealt with during the audio editing process; for example, the audio quality can vary widely from one source to another. Additionally, these recordings may need to be modified in order to conform to the audio limitations of studio or on-location recordings.

Audio editing programs have the distinct advantage of a digital environment in which to adjust, modify and assemble a complete audio track. The user is treated to a graphical interface that can group like-minded tools together, with varying levels of complexity and sophistication, manually handled or automatically activated. The complexity that can be found in audio editing programs can be broken down into three categories: the *casual user*, the *prosumer* and the *professional*. The differences between the three types primarily focus on the level of manual manipulation allowed, for example, the number of audio tracks, transitional effects and audio effects that can be manipulated, and whether the audio can be adjusted in a "real-time" environment or not. Still, all provide the tool set necessary to meld the audio to video competently, in a non-destructive manner that invites further exploration of the features.

### The Casual User

The casual user most likely sees audio editing as just a necessary part of a family home movie or other hobbyist video project. The audio editing feature may be a stand-alone application or one found built into a program that has video as the main objective. This does not mean that the audio capabilities will be insufficient, but it is most likely that many of the processes will be automated or configured in order to provide fewer choices, thereby making it less confusing for the user. While audio editors of this type can be purchased for a low cost, they are most likely to be provided for free by a computer manufacturer (for example, Apple), or designed as "open" by the developers so that it can be used without charge by a variety of computer operating systems.

### Apple iMovie/Free

iMovie is a free program provided with Apple computers as part of the iLife suite. Audio is an integral part of the program which provides a wealth of easy to use yet powerful features. For example, you can separate audio from a video segment, as well as "clip" the volume of added audio clips so that they are all the same volume. As another example, the Audio option of the Media button will let you add sound effects and music to the timeline, which provides a visual indication of the audio's placement. Adjustments within the program are made using sliders and

and-click action.

### Audacity/Free

Audacity is free to use and thanks to its open source configuration, will work with Microsoft Windows, Mac and even Linux. Features include effects such as sound equalization, noise removal and the ability to remove voices from the audio track. Importation of common audio files, such as WAV and AIFF, are supported. Audacity also gives you the availability to access an optional audio library for importing/exporting audio formats. The Device Toolbar is used to manage inputs and outputs, with a mixer board providing per-track volume unit (VU) meters.

### The Prosumer User

The prosumer is more hip to what can be done with audio in a production, and so will be expecting to find greater flexibility and control in the audio editing program used. The audio being created may not be for professional use, but the results are of professional caliber, as reflected by the equipment used to create the audio, along with the combining and mixing of differing types of audio clips (for example, dialogue, music and sound effects). The audio editing programs here allow for greater manual manipulation, while the graphical interface provides more details on what is being applied to individual audio clips. This could be their position in the timeline or the manipulations that are applied. But automated systems are still found here to provide a faster path to completing a production.

### Magix Entertainment MAGIX Audio Cleaning Lab MX/\$60

Designed with an eye towards audio restoration, along with the usual editing and mixing, this Windows program tries to make it as easy for the user to digitize audio as it is to output the finished audio to an optical disc or mobile player (there is also a function to handle cassette tapes). The user-friendly graphical interface presents functionality in an uncluttered fashion, with real stereo editing and optimized visualiza-

THE USER-FRIENDLY GRAPHICAL INTERFACE PRESENTS FUNCTIONALITY IN AN UNCLUTTERED FASHION.

tion. Additionally, audio noise levels can be seen onscreen to allow the removal of specific unwanted frequencies such as cars, coughs, clapping, etc. Besides reverb and echo that can be applied to

an overall track, there are more than 60 presets readied for automatic sound optimization. There are also audio-restoration wizards to simplify the process of sound cleanup.

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Doug Monroe.



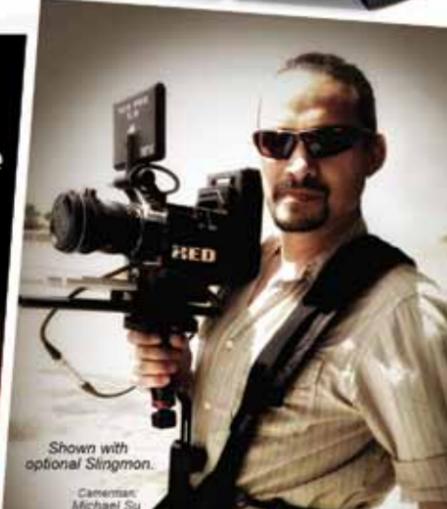
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INTERNATIONALSUPPLIES.COM



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# Audio Editing Software Buyer's Guide

## NOISE REDUCTION - WHY IT'S NEEDED

Noise reduction, aka "noise removal" is an important and useful tool in audio editing. By reducing the noise inherent in most environments you will be able to enhance the audio. This is especially important when dialogue has a lack of consistency in volume. The procedure involves taking a sample of the audio clip and marking the noise level as a profile using tools in the audio editing program. This baseline becomes the standard to which the program will compare audio clips that have been recorded in the same environment. The filtering procedure then eliminates instances of that sample.

### SmartSound Sonicfire Pro 5/\$100

Well suited for music editing, this program provides a wealth of customizable features and has a music-searching tool to simplify locating audio on the hard drive. The multi-track timeline interfaces with a video window, (permitting a simplistic approach to matching sound to video), and the instrument mix can be modified along the timeline at will, for example, dropping instruments behind dialog or removing them altogether. Timing control, so as to move musical beats in line with visual events is a given, as is the ability to export a pro-quality WAV or AIFF clip (or as a video/audio file). SmartSound's music library is available for purchase and the program can adjust tracks to a custom length.

### The Professional User

Professionally oriented audio editing programs do not, as a general rule, sacrifice ease of use for power, and do require a steeper learning curve in order for the sophisticated toolkit to be properly used. These programs provide a deep level of control over the audio tracks, including the ability to manipulate great amounts of audio tracks in a straightforward manner, with signal frequency range control as well as the expected "physical" manipulation. Detailed control of the MIDI environment, which includes hardware device control, is available. A real-time environment will allow for changes and modifications to the audio without the problems associated with latency. The cost of these are typically the highest of all the audio programs, but even with that said, they can be had for less than \$500.

### Avid M-AUDIO Pro Tools MP9 Professional Music and Audio Creation for M-Audio Interfaces/\$300

The PC or Mac program provides studio-standard composing, recording, editing, mixing and MIDI sequencing control. It can function with as many as 48 mono or stereo tracks (24-bit/96kHz) oper-

ating simultaneously. Pro Tools includes six virtual instruments that can be mixed with the pitch and time and each can be adjusted "on the fly" in an elastic fashion. It is compatible with off-the-shelf M-Audio hardware (interfaces) and added features are real-time audio and MIDI processing, a Loop

Trim tool (turns audio/MIDI regions into loops) and a Dynamic Transport mode that lets playback operate independently of the current selection.

### Adobe Audition CS6/\$349

This program lets you record audio as well as edit and mix it. A low latency response means that the unlimited tracks can be mixed without delays. In addition to a complete audio toolkit, it has more than 50 audio effects and DSP (digital signal processing) tools. Native 5.1 surround sound is also supported. Time-saving features include automatic speech alignment, audio restoration tools and real-time clip stretching. Also available is control surface support - such as for those devices using Mackie Control and Mackie Logic protocols, along with AVI Artist Series control surfaces.

Designed with the professional user in mind, the visual interface is still sufficiently intuitive to not dissuade the lesser-experienced user (thanks to Sessions templates). The Media Browser tool includes a preview mode as well as an auto-play function. **||**

Marshal M. Rosenthal is a writer of technology and consumer electronics.

**!** For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15347 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15347](http://www.videomaker.com/article/15347)

THESE PROGRAMS PROVIDE A DEEP LEVEL OF CONTROL OVER THE AUDIO TRACKS... AS WELL AS THE EXPECTED "PHYSICAL" MANIPULATION.

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#C02HDHC



NEW

5 Mega Pixels

HD

### GoPro

HD HERO2 / 3D Kit

- Records 1080p, 960p, 720p HD Video
- SD/SDHC up to 32GB
- 1/2.3", 11Mp CMOS sensor
- 2X sharper pro glass lens
- f/2.8 Fixed Focus
- 170° wide, 127° medium FOV (including 1080p)
- 90° narrow FOV • Microphone input

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11 Mega Pixels

AVCHD

### SONY MHS-TS55/S

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- Records 1080p HD video • Live WiFi streaming
- Wirelessly upload videos to internet
- Internal 8GB flash memory (shoot Up to 3 Hrs)
- Captures 12.8 Mp still images
- 1/2.5" Exmor CMOS sensor
- 3.0" touch screen LCD screen
- SteadyShot image stabilization
- 4x digital zoom
- LED light for low-light filming
- Flip-out USB arm • Mac & PC compatible

#SOMHSTS55S



13 Mega Pixels

### Panasonic. HX-WA2

Waterproof HD Dual Camcorder

- Capture 1920 x 1080 HD video
- Record onto SD/SDHC/SDXC media cards
- Waterproof up to 9.8 feet (3 meters)
- 5x optical, 12x wide-range, and 15x intelligent zoom
- 1/2.33" MOS Sensor • Electric image stabilization
- 285-degree rotating 2.6" wide LCD screen
- Panorama shooting mode • Face detection mode
- High-speed consecutive shooting mode
- Includes software for easy web uploading

Blue #PAHXWA2BL / Orange #PAHXWA2O



14 Mega Pixels

### SONY HDR-GW77V

Full HD Flash Memory Camcorder

- Solid State HD Waterproof Camcorder
- 16GB internal flash memory
- Waterproof down to 16.4' (5 m)
- Waterproof, shockproof, dustproof
- Shoot HD 1920 x 1080/60p Video
- 1/3.9", 5.4Mp Back-illuminated "Exmor R" CMOS sensor
- 10x optical Sony G series lens
- Optical image stabilization
- 3" LCD screen • Geotagging with built-in GPS

Black #SOHDRGW77VB / Blue #SOHDRGW77VBL / White #SOHDRGW77VW



20 Mega Pixels

### Canon VIXIA HF M52

HD Flash Memory Camcorder

- Canon 1/3" HD 2.37Mp CMOS pro image sensor
- 1920 x 1080 recording on to SD/SDHC/SDXC media
- Internal 32GB flash memory
- HD 10x optical zoom lens
- 3.0" widescreen LCD
- Optical image stabilization
- Cinematic Features
- 24p cinema & 30p progressive modes
- Microphone & headphone inputs
- Built-In WiFi

#CAHFM52



AVCHD

### SONY HDR-CX760V

HD Flash Memory Camcorder

- 1920 x 1080 60p HD recording • 1/2.88" back-illuminated Exmor R CMOS sensor • Internal 96GB flash memory
- SD/SDHC/SDXC card slot
- 3.0" LCD screen & color viewfinder
- 10x optical & 17x extended zoom
- Optical image stabilization
- Carl Zeiss Vario-Sonnar T lens
- Geotagging through GPS & NAVTEQ maps
- Microphone & headphone inputs
- CinemaTone presets & 24p recording

#SOHDCX760VB



24 Mega Pixels

AVCHD

### SONY HDR-PJ760V

HD Flash Memory Camcorder

- 1920 x 1080 60p HD recording
- 1/2.88" back-illuminated Exmor R CMOS sensor
- Built-in projector (Up to a 100" Diag.)
- Internal 96GB flash memory
- SD/SDHC/SDXC card slot • 3.0" LCD
- 10x optical & 17x extended zoom
- Optical image stabilization
- Carl Zeiss Vario-Sonnar T lens
- Geotagging through GPS & NAVTEQ maps
- Microphone & headphone inputs

#SOHDRPJ760VB



24 Mega Pixels

AVCHD

### Panasonic. HC-X900M

3 MOS HD Flash Memory Camcorder

- Internal 32GB flash memory • SD/SDHC/SDXC card slot
- 3x 1/4.1", 3.05Mp sensors
- 3D recording with optional VW-CLT2 3D lens
- 1080/60p recording at a 28-Mbps bit rate
- Optical image stabilization
- Leica Dicomar 12x optical, 23x intelligent zoom lens
- 3.5" wide angle 3D LCD screen
- Pre-record function
- Microphone & headphone inputs

#PAHCX900MK



16 Mega Pixels

AVCHD

### SONY HDR-TD20V

3D HD Handycam Camcorder

- Shoot f D 3D in 1920 x 1080 60p/24p
- Dual 1/4.0" back-illuminated Exmor CMOS sensors
- Dedicated 2D/3D switch
- 3.5" LCD (3D viewing without 3D glasses)
- Optical 10x & 17x extended zoom
- Optical image stabilization
- 5.1 ch surround mic
- Microphone & headphone inputs

#SOHTRTD20VS



20 Mega Pixels

AVCHD 3D

### SONY HXR-NX3D1

Professional 3D Compact HD Camcorder

- Dual 1/4" Exmor R CMOS sensors
- Two Sony G lenses (10x optical in 3D)
- 96 GB internal memory
- One SD or Memory Stick card slot
- 3.5" LCD (view 3D glasses-free)
- Full 1920 x 1080 in 3D and 2D
- 3D modes: 60i, 50i, 24p (28 Mb/s)
- 2D modes: 60p, 50p, 60i, 50i, 24p, 25p
- Active SteadyShot in 3D
- Dual XLR inputs (line / Mic / Mic +48V selectable)

#SOHXRNX3D1U



AVCHD

### Panasonic. HDC-Z10000

Twin-Lens 2D/3D Camcorder

- Two independent 3MOS sensors
- HD Stereoscopic 3D recording
- Dual Integrated 10x Lenses (12x in 2D) • Triple manual rings: focus, zoom and iris
- Multi View Coding (MVC) Recording in 3D 1080p60
- 3.5" 3D compatible LCD
- Dual XLR Inputs
- 2D/3D Still Image Recording

#PAHDCZ10000



AVCHD 3D



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### Canon VIXIA HV40 HDV Camcorder

- 1/2.7" 2.96MP HD CMOS sensor with RGB primary color filter
- Frame rates: 60i, native 24p (records at 24p), 24p cinema, and 30p (at 60i)
- DIGIC DV II image processor
- Canon HD 10x optical video lens
- Instant Auto Focus w/ext. sensor
- SuperRange optical stabilization
- 2.7" widescreen LCD screen
- External mic input
- Smooth variable zoom with 3 fixed zoom speeds



3 Mega Pixels HDV

#CAHV40

### Panasonic AG-HMC40 3-CMOS Pro HD Solid State Camcorder

- 1080 and 720 HD resolution recording on SDHC cards
- 3 1/4" 3-MP CMOS HD image sensors
- AVCHD MPEG-4 AVC/H.264 encoding
- 10.6-megapixel still capability
- 12x optical zoom
- 2.7-inch LCD monitor
- XLR audio input, HDMI output, USB 2.0



AVCHD

#PAAGHMC40

### SONY HXR-NX30 Compact HD Camcorder

- Shoots AVCHD Up to 1080/60p at 24Mbps
- Built-in 96GB Flash Memory Capacity
- Pro Audio Control & Level Adjustment
- Equipped with Dual XLR Inputs
- Built-in Projector & 3.5" LCD Monitor
- Built-in Stereo Shotgun Microphone
- Super-Wide Carl Zeiss 10x Optical Lens
- Balanced Optical SteadyShot
- Features SD or Memory Stick Card Slot



AVCHD

#SOHXRNX30U

### Canon VIXIA HF G10 HD Flash Memory Camcorder

- 1920 x 1080 HD Recording
- 32GB internal flash memory
- Two SD/SDHC/SDXC card slots
- 1/3" 2.37Mp HD CMOS pro sensor
- 3.5" LCD & Color viewfinder
- Genuine Canon 10x HD Video Lens
- SuperRange optical stabilization
- Custom cinema-Look filters
- Professional shooting assist functions



AVCHD

#CAHFG10

### Canon XA10 Professional HD Solid State Camcorder

- 64GB Internal and Dual SDHC/SDXC card slots with relay recording
- 1920 x 1080 CMOS Image Sensor
- Canon 10x HD Video Lens
- 8-Blade Iris and Manual Focus Ring
- DIGIC DV III Image Processor
- 24Mbps Recording (AVCHD)
- 3.5" High-resolution touch panel LCD and EVF
- Dual XLR terminals



AVCHD

#CAXA10

### Canon XF100 / XF105 HD Professional CF Camcorders

- 1/3" CMOS 1920 x 1080 CMOS sensor
- Dual CF card slots
- 50Mbps MPEG-2 recording
- Canon's MPEG-2 4:2:2 color sampling
- 60p/60i, 30p, 24p MXF File Format
- 10x HD zoom lens
- 3.5" 920K dot LCD monitor
- Stereoscopic 3-D recording capabilities
- Dual XLR inputs
- Waveform Monitor



AVCHD

#CAXF100 / #CAXF105

### JVC GY-HM150U 3-CCD ProHD Solid State Camcorder

- Supports 1920/1440 x 1080, 1280 x 720 HD formats in 35, 25, and 19Mbps with variable frame rates
- Dual SDHC card slots (loop, pre-record)
- Captures native QuickTime files
- Fujinon 10x HD lens
- Optical image stabilization
- Dual XLR audio, with phantom
- Color viewfinder and large LCD monitor



ProHD

#JVGYHM150

### SONY HDR-AX2000 3-CMOS AVCHD Flash Camcorder

- Three 1/3" CMOS Exmor sensors
- Records to Memory Stick PRO Duo, SD/SDHC Cards (Dual media slots)
- 1080/60i, and 24p/30p AVCHD recording
- 20x zoom G-Lens (29.5mm wide)
- Zoom, focus, and iris rings
- Dual XLR inputs
- 3.2" Xtra Fine LCD
- Low-light (1.5 LUX) capabilities
- CinemaTone Gamma and CinemaTone Color control



AVCHD

#SOHDRAX2000H

### SONY HXR-MC2000U Shoulder Mount AVCHD Pro Camcorder

- 1/4" 4.2Mp, ClearVid Exmor R CMOS sensor
- Built-in 64GB hard drive
- SD/SDHC/SDXC & Memory Stick slot
- 1920 x 1080i AVCHD (24Mbps)
- MPEG-2 SD Mode (9Mbps)
- 12x wide angle Sony G lens
- Optical SteadyShot stabilizer
- 2.7" ClearPhoto LCD
- Manual lens ring with assignable parameters



AVCHD

#SOHXRMC2000U

### Panasonic AG-HMC80 3-CMOS Pro HD Solid State Camcorder

- 3 1/4.1 CMOS sensors
- 1080 or 720 HD recording
- SD/SDHC media card slot
- 12X optical smooth zoom lens
- High-definition and standard-definition recording
- Pre-record & interval recording
- Optical image stabilization
- Dual XLR/3.5mm mic-in inputs
- HDMI, USB, DV, Component terminals



10 Mega Pixels AVCHD

#PAAGHMC80

### Panasonic AG-AC130A / AG-AC160A 3-MOS HD Handheld Camcorders

- 3x 1/3", 2.2 Mp CMOS sensor - 18-bit dsp
- 22x optical zoom lens
- 1080p 1080i 60p/p30/p24 & 720p60
- Three rings; Manual Zoom, Focus & Iris
- Dual SD/SDHC/SDXC card slots
- AVCHD & DV recording (SD) modes



AVCHD

#PAAGAC130A / #PAAGAC160A

### Panasonic AG-HPX250 / AG-HPX250 3-MOS HD Handheld Camcorders

- 3x 1/3", 2.2 Mp CMOS sensor - 18-bit dsp
- 22x optical zoom lens
- 1080p 1080i 60p/p30/p24 & 720p60
- Three rings; Manual Zoom, Focus & Iris
- HD-SDI & HDMI output
- 59.94 Hz / 50 Hz switchable
- Slow/quick motion recording mode
- P2 card and DVCPRO mode recording



DVCPRO HD

#PAAGHPX250 / #PAAGHPX255

### JVC GY-HM10U 4K Flash Memory HD Camcorder

- Record real time 4K imagery (3,840 x 2,160) at 24p, 50p and 60p
- 1/2.3" back-illuminated CMOS sensor with 8.3 million active pixels (3840 x 2160)
- SDHC/SDXC media card slot
- Ultra high resolution F2.8 10X Zoom Lens (F2.8 to 4.5 — f=6.7-67 mm) (35 mm conversion: 42.5 to 425 mm)
- 3.5" high resolution touch panel LCD screen
- 0.24" Lcos 260,000 pixel viewfinder
- Optical image stabilization
- Interval (time lapse) recording in both 4K and HD modes



AVCHD 4K

#JVGYHM10U

### SONY HXR-NX5U 3-CMOS NXCAM Flash Memory Camcorder

- Three 1/3" Exmor CMOS sensors, with a ClearVid array
- Capture uses Memory Stick PRO Duo / SDHC Cards, with relay record capability (optional HXR-FMU128 flash memory unit)
- 20x wide G series lens
- HD-SDI & HDMI output, SMPTE Time Code in/out, Dual XLR inputs
- Built-in GPS system
- 3.2" Xtra Fine LCD



AVCHD

#SOHXRNX5U

### Panasonic AG-HPX370 3-CMOS Pro Solid State Camcorder

- 10-bit, 4:2:2, native 1080 and 720p HD resolution in variable frame rates
- AVC-Intra 100 and 50 codecs
- Two P2 card slots (hot swapping, loop, pre-record)
- 3 advanced 1/3", 2.2 MP CMOS sensors
- HD-SDI output
- 20-bit digital signal processor
- 17x Fujinon HD lens
- Built-in scan reverse mode
- Waveform and vector scope display



DVCPRO HD

#PAAGHPX370

### Canon XF300 / XF305 3 CMOS Solid State HD Camcorder

- Record HD 1080/720 onto Compact Flash cards
- 50Mbps MPEG-2 4:2:2 recording
- 3 1/3" 2.37Mp CMOS sensors
- 18x Canon HD L series lens
- DIGIC DV III image processor
- 4" 1.23 Mp LCD monitor
- 1.55 Mp Color EVF
- Over and under crank
- XF305 Step-up: HD-SDI Output, Genlock & SMPTE Time Code



HD

#CAXF300 / #CAXF305

### SONY PMW-100 XDCAM HD422 Handheld Camcorder

- 1/2.9" CMOS Sensor (1920 x 1080)
- XDCAM 422 MPEG-2 Codec at 50 Mbps
- 10x Zoom Lens - 40-400mm (35mm Equiv)
- 3.5" LCD Screen (852 x 480 Pixels)
- HD-SDI & HDMI Outputs
- Dual XLR Inputs / Timecode & Genlock I/O
- Dual ExpressCard SxS Card Slots
- Compatible with XDCAM Disc & EX Formats
- DVCAM Recording



XDCAM

#SOPM100

### SONY PMW-200 XDCAM HD422 Camcorder

- Three 1/2" Exmor CMOS sensors
- MPEG HD422 at 50 Mbps recording
- HD422 1080p at 24 & 30 fps HD422 720p at 24, 30 & 60 fps Fujinon 14x zoom (servo/manual) lens
- Dual SxS memory card slots
- Four Channels of 16-bit audio
- Supports MXF and XDCAM EX workflows
- Articulated 3.5" LCD screen
- Timecode & Genlock input
- Cache recording Up to 15 seconds



XDCAM

#SOPM200

### SONY NEX-VG20 Interchangeable Lens HD Camcorder

- Exmor APS-size HD CMOS 16.1 Mp sensor
- Records 1920 x 1080 @ 24p, 60i, 60p
- Memory Stick PRO Duo/SD/SDHC/SDXC card slot
- Sony NEX E series lens mount (A series option)
- 24 Mb/s AVCHD MPEG-4 AAC-LC
- 3.0" LCD and CVF
- Quad-capsule microphone & 5.1 Sound
- CinemaTone Gamma / Color
- Manual audio control



AVCHD

#SONEXVG20 (Body Only) #SONEXVG20H with lens

### Panasonic AG-AF100 Professional Memory Card Camcorder

- Large 4/3-type MOS sensor
- Micro four thirds lens mount
- Uses still & cinema lenses
- Two SDHC/SDXC memory card slots (Relay Recording)
- AVCCAM Recording 1080i/p, 720p variable frame rates
- Optical low-pass filter
- HD-SDI, HDMI output, Dual XLR



Lens Optional AVCCAM

#PAAGAF100

### SONY NEX-EA50H HD Shoulder Mount Interchangeable Lens Camcorder

- Exmor APS-C CMOS sensor (AVCHD / MPEG2-SD)
- Supplied 18-200 servo power zoom
- E-mount interchangeable lens system
- Add lenses without being locked on a lens brand or lens mount
- Use Alpha A-mount lenses with 15-pin phase detection AF
- Mechanical shutter Still Picture
- 3.5" LCD Panel
- Record onto Memory Stick/SD/SDHC/SDXC/HXR-FMU128 (Optional)
- Records on media card and FMU128 Simultaneously



AVCHD

#SONEXEA50H

### SONY PMW-EX3 3-CMOS XDCAM EX Camcorder

- Interchangeable 1/2" bayonet lens mount, incl. Fujinon 14x5.8 lens
- 3 1/2" Exmor CMOS image sensors that shoot full raster 1920x1080 hi-def imagery
- Recording on removable SxS flash memory cards
- 1080 and 720 shooting modes with selectable bit rates in both PAL and NTSC standards
- Hi-res 3.5" LCD monitor
- 8-Pin remote studio connectivity



\$8,320.00 XDCAM EX

### Canon EOS C300 Cinema EOS/PL Camcorder Body

- Super 35mm CMOS sensor
- 50 Mbps MPEG-2 EF or PL lens mount
- Dual CF card slots
- Canon XF Codec - 4:2:2 color sampling
- Multiple recording formats
- High-resolution VF and 4", 1.23 Mp LCD
- HD-SDI, HDMI, XLR audio
- Canon DIGIC DV III image processor
- High-Speed, Slow-Motion, Time-Lapse and Stop-Motion
- Timecode I/O, Genlock in & Sync out



Lens Optional

#CAC300EF / #CAC300PL

### SONY PMW-F3K-RGB Super 35mm HD Camcorder Kit

- Includes RGB 4:4:4 baseband output with S-LOG gamma
- Exmor Super 35 CMOS image sensor
- Includes 35mm, 50mm, 85mm lens kit
- PL lens mount, 35mm Cine lens compatibility
- 10-bit 4:2:2 HD-SDI
- Two SxS memory card slots
- Interlace/Progressive modes
- D-SDI Dual-link output
- 3D-LINK option



\$19,890.00 XDCAM

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# Recording in Public Places

RESTRICTED AREA



## and Your First Amendment Rights

BY MICKEY H. OSTERREICHER, NPPA GENERAL COUNSEL

Ever since video cameras became accessible to the masses, there's been grand debate on what one can or cannot record while in public.

While film had been around for a long time, not a lot of people recorded huge amounts of day-to-day activities due to film's costs and processing. Video cameras came along in the 1980s, and were large, cumbersome and expensive, but over the decades they became smaller in size and lesser in price making them easy to manage and acquire. And then came mobile phone cameras. ...

Simplicity is often elusive when it comes to legal matters, so it should be no surprise that the answers to questions related to recording video and audio in public places contain few pat answers other than "it's complicated." Indeed, that is because laws, regulations and rules in these matters differ between federal, state and municipal governments. Further

complications arise when looking at such concerns as still photography versus audio-visual recording and editorial versus commercial use.

### Key Words: Defining the Laws

In an attempt to provide some broad guidelines, it is helpful to understand a few main concepts. The First Amendment to the U.S. Constitution

states "Congress shall make no law ... abridging the freedom of speech, or of the press. ..." This has been interpreted to mean that no government entity may curtail free speech and press activities. Photography in its broadest sense is protected as a form of free expression; however, constitutional protections are not absolute and may be subject to "reasonable time, place

and manner restrictions," and the main keyword is "reasonable."

As a general rule, both the public and the press have a right to record government officials or matters of public interest in a public place. But it is one thing for a photographer to know his or her rights when recording public officials and quite another for security guards, police officers and

government officials to be aware of or even care about those rights.

While it is not illegal to photograph or record images in public places in almost every state, some states have eavesdropping laws that criminalize recording oral conversations without permission, which has led to arrests due to the fact that videographers don't usually make silent movies.

When arrested, photographers are also typically charged with disorderly conduct, obstruction of governmental administration or trespass.

### Your Obligations and Your Rights

Although there is no obligation to show your images to a law enforcement officer, you may be asked to do so. It is important to know that you do

## Recording in Public Places and Your First Amendment Rights

 Mickey H. Osterreicher is of Counsel to Hiscock & Barclay, and serves as general counsel for the National Press Photographers Association (NPPA). He is a member of the MLRC Newsgathering Committee, the American Bar Association Communication Law Forum and the New York State Bar Association Committee on Media Law. He has been a photojournalist for over thirty-five years and drafted letters to law enforcement agencies in all of the incidents listed in this story. He met with the NYPD Police Commissioner along with other media groups in order to help resolve issues arising from the arrests of journalists covering events at Occupy Wall Street and has been conducting training with the Chicago, Tampa and Charlotte-Mecklenburg Police Departments in preparation for the NATO Summit and the Republican and Democratic National Conventions in those respective cities. For more information on NPPA advocacy see: [http://nppa.org/member\\_services/advocacy](http://nppa.org/member_services/advocacy).

not have to consent to such a request. Under certain conditions known as “exigent circumstances,” where an officer believes that your recording might contain evidence of a crime and subsequently seize your equipment and material in order to prevent it from being lost or destroyed. However, it may not be searched, viewed and copied without proper legal authority such as a search warrant or subpoena. Under no circumstances may anyone delete those recordings or order you or a third party to do so.

### What to Do if Encountered

So what steps does a videographer or photographer take when faced with these ever-increasing encounters? Obviously every situation is different, but it is important to stay calm, speak in a conversational tone and be respectful. Whenever possible, try to keep recording the interaction as it may be your best evidence of what actually happened should you get arrested. If the officer or guard is willing to talk, which often they are not, try to explain your position and respectfully assert your understanding of your rights. If the officer still tries to stop you, request to speak to a supervisory

or public information officer, and if that is not possible, you may be faced with a personal decision as to whether what you are doing is important enough to risk arrest. No one else can make that decision for you, as it is your liberty that is at stake. In case you are arrested, you may win the legal battle but that usually takes some time and may also be costly.

### A Landmark Case When Lines Become Blurred

Take the case of Simon Glik who was arrested in 2007 by Boston police for recording the arrest of another citizen. Glik was charged, among other violations, with violating the state’s eavesdropping law which prohibited the surreptitious recording of oral conversations. Those charges were dropped and he commenced a federal civil rights lawsuit against the officers and the police department. After a widely heralded decision by the U.S. Court of Appeal for the First Circuit, upholding “the fundamental and virtually self-evident nature of the First Amendment’s protections” of the “right to film government officials or matters of public interest in public space,” the case was recently settled with the City

of Boston paying Glik \$170,000.

That First Circuit decision also addresses the fact that the public and the press have a “coextensive” right to gather information including photography and recording audio in public places, recognizing that “changes in technology and society have made the lines between private citizen and journalist exceedingly difficult to draw.” Additionally, the court stated, “The proliferation of electronic devices with video-recording capability means that many of our images of current events come from bystanders with a ready cell phone or digital camera rather than a traditional film crew.” The First Amendment right also applies to those individuals with and without press credentials.

### Landmark Case Gets National Attention

Unfortunately the decision in *Glik* is binding only in Massachusetts, New Hampshire, Maine, Rhode Island and Puerto Rico. However, its persuasive reasoning has been cited by courts and lawyers nationwide. Glik was an attorney himself in this case and had the help of the American Civil Liberties Union along with the support of many First Amendment organizations. In another case, a freelance photographer filed suit against the Suffolk County Police for similar civil rights violations.

On May 8, 2012 the United States Court of Appeals for the Seventh Circuit granted a preliminary injunction in *ACLU v. Alvarez*, blocking enforcement of the Illinois eavesdropping statute as it applies to audio recording of police performing “their duties in public places and engaging in public communications audible to persons who witness the events.” What this means is that in Illinois, Indiana and

Wisconsin, permission is not required to record (video and audio) police officers or anyone else while they are in a public place (see below for limitations on how those recordings may or may not be used.) Read more at: [www.videomaker.com/r/648](http://www.videomaker.com/r/648).

### Homeland Security

Another measure that has led to photography as a suspicious activity comes from language found in documents published by the federal government. The ISE-SAR Criteria Guidance, issued by the Department of Homeland Security, lists photography as a potential criminal or non-criminal activity. “Taking pictures or video of facilities, buildings, or infrastructure in a manner that would arouse suspicion in a reasonable person. Examples include taking pictures or video of infrequently



Be cautious of recording potentially sensitive material like planes and building entrances, it may concern the Department of Homeland Security, thankfully they provide guidelines.

used access points, personnel performing security functions (patrols, badge/vehicle checking), security-related equipment (perimeter fencing, security cameras), etc.” The ISE-SAR Criteria Guidance also notes: “These activities are generally First Amendment-protected activities and should not be reported in a SAR

or ISE-SAR absent articulable facts and circumstances that support the source agency’s suspicion that the behavior observed is not innocent, but rather reasonably indicative of criminal activity associated with terrorism, including evidence of pre-operational planning related to terrorism. Race, ethnicity,

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## Recording in Public Places and Your First Amendment Rights



Press passes are not one-size-fits-all, and the pass you have might have restrictions, so, investigate your access.

*national origin, or religious affiliation should not be considered as factors that create suspicion (although these factors may be used as specific suspect descriptions)."*

While this revised definition of photography is certainly welcome, there are many organizations including the Los Angeles Police Department that still define under suspicious activity someone who "takes pictures or video footage (with no apparent esthetic value, i.e., camera angles, security equipment, security personnel, traffic lights, building entrances, etc.)"

Unfortunately these definitions have erroneously created the impression in law enforcement circles that photography is a categorically suspicious activity rather than a constitutionally protected form of expression. It has also led many officers to stop,

question, interfere with and detain those recording on city streets in an unrealistic and expanded view that automatically equates photography with terrorist or criminal surveillance.

### No Farm Shots? Driving Shots?

New legislation in a number of states has also criminalized photography and recording of farm activities and in some states makes it illegal to possess and distribute such images and recordings. These bills have been introduced in a number of states including: Indiana (SB 184), Florida (SB 1184/ HB 1021), Minnesota (HF 1369/ SF 1118), Missouri (SB 695), Nebraska (LB 915), Illinois (HB 5143), Iowa (HF 589), Utah (HB 187), and New York (S5172). Another Illinois bill (HB 5099) prohibits the use of devices capable of digital photography and videography while operating a motor vehicle.

### When is Public Really Public?

Once again, the general rule for recording is: where there is public access in such traditional public forums as a sidewalk or a park you are permitted to record anything in plain sight (i.e. buildings, people) because in such places there is no *reasonable expectation of privacy*. In other areas that are generally open to the public but may be privately owned such as a mall, recording may be restricted either by posted signs or by mall personnel. In order to avoid confrontations it is always a good idea to check with property owners to obtain permission before recording.

### The Private Sector

It also is important to remember that the First Amendment only protects against governmental limitations.

Businesses and non-government organizations may require special credentials in order to gain entry to an event and to record. Usually such credentials may only be obtained by agreeing to or meeting certain requirements specified in writing, such as NFL sideline passes. Many press credentials issued by law enforcement agencies allow the bearer to cross police and fire lines under certain conditions. Whenever possible, apply for credentials to specific events well in advance because a basic press pass (if you have one) may not suffice.

### Recording Public Meetings

The right to record public officials or record at public meetings is another question of concern to photographers. Most governments have freedom of information statutes as well as open meeting laws that address those questions; however, it is important to check the law in your area. For example, in California, when attending a meeting of a governmental body that is required by law to be open to the public, you may record audio and/or video unless the governing authority makes a determination that such recordings may disrupt the proceedings because of such things as noise, lighting or obstructing a view. These restrictions must be reasonably related to achieving a governmental purpose and may not be imposed because the officials do not like the opinions of the person doing the recording. The same would be true of a government official out in public or attending a public meeting.

### Public, Private, Permits & Proof

There is also a very big distinction between recordings made for editorial (journalistic) purposes and those made

for commercial gain (advertising or product sale). Depending on the type of photography in question, many parks and transit systems require those wishing to record to obtain a permit in advance. Usually such permits require that a fee be paid and that proof of insurance be provided. Another important difference is the need for model releases when recording someone for commercial purposes. It is very important to remember that just because you may have a right to record something or someone does not mean you have a right to use that material in any way you choose, even when shooting in a public place.

### Resources for Support

The National Press Photographers Association (NPPA) has been involved

in many of the incidents mentioned above. For a list of resources go to: [www.videomaker.com/r/649](http://www.videomaker.com/r/649)

There is no excuse for police and security officers to intentionally disregard a citizen's right to record an event occurring in a public place but it will continue to happen until departments create better guidelines, conduct proper training and administer discipline when appropriate. This will only come about through greater awareness of these incidents and strong advocacy on behalf of journalists and citizens by such groups as the Reporters Committee for Freedom of the Press, NPPA and personal accounts from blogs like *Photography Is Not A Crime*. It may also require filing suit in egregious cases, such as the one recently brought by NPPA member Philip Datz.

### Being Aware is Key

In a time of technology and terrorism, photojournalists throughout the world have risked and in some cases given their lives to provide visual proof of governmental activities. Sadly, what is viewed as heroic abroad is often considered as suspect at home. It is therefore incumbent that those who wish to exercise these freedoms, be aware of their rights and do their best to counter such abridgments through heightened awareness and education. ■

Mickey H. Osterreicher serves as general counsel for the National Press Photographers Association (NPPA) and is a member of the MLRC Newsgathering Committee, the American Bar Association Communication Law Forum and the New York State Bar Association Committee on Media Law.

For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15619 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15619](http://www.videomaker.com/article/15619)

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### When in Rome ...

This feature addresses only laws in the United States of America and its territories. **Videomaker** community members in other countries need to research laws pertaining to their own rules. U.S. citizens traveling outside of the U.S. need to understand they are subject to that country's laws, not those of the U.S. Constitution.

# 15 Keys to Successful Event Video

BY RUSSEL FAIRLEY

One of the comforts in controlled shoots is that you can always try a few things to see what works with a scene. Move a light a few times. Take time to test audio with different microphones in different positions. Maybe swap cameras to see if the Canon EOS 5D Mark III gives you a better effect than the Sony PMWEX3.

These comforts are welcome in those environments, but other types of shoots – particularly event video – aren't always so controlled, and great planning must be undertaken to ensure a good final product.

## Some Quick Tips to Being Prepared

Whether you are shooting wedding and event videography or school sports, you need to be prepared. There are no do-overs. Some of these tips sound like common sense, but each one has either helped me immensely, or bitten me badly when I forgot to do them. This is the checklist that I go through before I take on any event. ►►

Whether you're shooting a tax seminar, a wedding or a break-dance summit, event video can be some of the most interesting, stressful, exciting, and ultimately rewarding video work you will come across.



# 13 Keys to Successful Event Video

## 1 What Kind of Planning? All Kinds!

Before an event shoot, it's normal to get a little bit tense. One of the best ways to get calm is to take some time to get prepared. Charge more than your camera batteries – charge up your cell phone and pack a charger. When all else fails, your phone can be your lifeline to communicate with the rest of the staff. Fill up your gas tank to avoid a stop on the way, and get your car looking presentable, inside and out, you never know if you'll be driving a subcontractor or a client to the subway or their hotel after you've concluded the event.

Map your location in advance. You'll not only get an idea of the venue's scale and appearance, but you might even notice staff or loading areas, which will help you when the event rolls around. This is not a replacement for early access to the event, but any bit of information you can procure prior the event will help you feel prepared. Is it a two-camera shoot? Why not get your video mode, frame rates and color profiles matched up? It turns the task into simply a "double-check" on event day.

## 2 Know Who's in Charge

When scoping an event, you'll want to meet with your clients beforehand to get a solid understanding of their expectations –

Mapping outlet locations and people movement can prevent you from losing a shot and save you from headaches throughout.



what do they want you to shoot, what are you delivering after the event, and what are the deadlines for that content.

Ask who will be in charge on the day(s) of the event – it may or may not be the same person you originally dealt with when coordinating your role. You'll need this contact for any questions you have on recording day. Find out if there is a rehearsal day, or at least early access to the venue. You'll want to check out your location to scout for lighting, wall outlets, and obstacles. If there is a rehearsal, make good use of it; test audio feeds, ensure your cameras are in good condition, and look at the lighting environment to see if you'll need to augment what's already there to enhance your footage.

## 3 Get a Schedule

Prior to the event, sometimes at the last minute, the client should provide you with an event schedule. If they don't, ask for one. This will give you an idea of how the day(s) will flow, and serve as a general outline to work with. Keep in mind the time allotted to the travel from place to place. Make notes on the schedule detailing any special requests or location changes.

## 4 Make a Shot List

When preparing for a special event, I generally make two lists: First, make a list of the gear needed, such as headphones or a tripod. Second, make a list of specific shots the client will expect. Be sure when making this list to label times and places that these "Must Capture" moments will take place. You'll certainly want to have pre-planned at least some of your B roll as well.

## 5 Shoot From Your List!

It's not enough to write a list – you need to use it! A key production principle is *plan your shoot, shoot your plan*. Your client will be counting on you to follow this principle whether they realize it or not, so create your plan and execute it.

Also, get things you may or may not need for editing. Regardless of the type of event you're shooting, from weddings to corporate gigs, it's always good practice to grab establishing shots, as well as extra B roll audio and video. If you think it'll be too busy during the event, grab an establishing shot on a nice day leading up to the big day.

## 6 Map Your Setup Locations and Times

Depending on the venue, you may have to do a bit of walking to get from one position to another in time to capture key events. If you know you're going to be on the move, make sure you allow time to get from one spot to the next and with the right crew and equipment. Make sure you're in the right place at the right time – all the time.

## 7 Prepare for the Worst – Bring Extra Everything

You never know when a problem will arise. At some events your entire job might have you sitting in a chair while your camera records right next to you and nothing will go wrong. Other times you might have cables go bad, camera failures, missing media, broken adaptors, accidents with gear, spills, and other various problems. Adapting becomes key, and to do that, you may need extra equipment.

When you create your list of essential gear, make sure you've got extras for any items you can't do the shoot without.

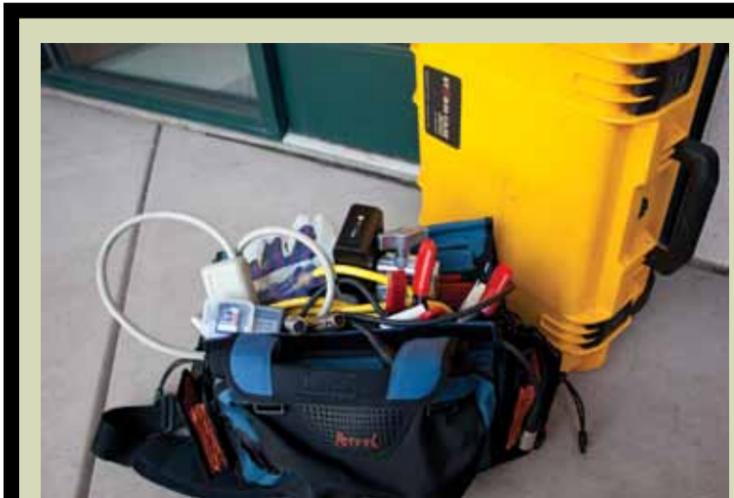
Having extra gear is also handy when opportunities present themselves. An extra lavalier microphone in your bag might mean you can capture an impromptu interview, or an extra camera might capture a moment when a VIP makes a rare and brief appearance. Small things like this can completely change the value you bring to the job in your client's eyes.

## 8 Know Your Gear

This is important and often overlooked. I don't mean learn how to turn your camera on and off, and zoom in on your subject – hopefully you know how to do those things – I mean really learn everything you can about your gear.

If you're shooting tapeless, do you get a blip in your recording when your camera software automatically breaks up your video file at 4GB to conform to your FAT32 memory card? Do you know how to change audio channels and fend off interference with your wireless microphones in an environment full of wireless signals? Do you know how to change the settings on your camera for different microphones, or how to set the camera to output to a screen via HDMI or SDI properly?

Factors that often only show themselves in event environments are definitely worth prepar-



ing for. Create test scenarios at your home or office – try leaving your camera recording all day then review the footage for issues. Test your audio in different locations, (busy apartment buildings or malls might simulate Wi-Fi saturated environments), and play with the video output settings and see what works best with your hardware.

## 9 Make Friends with the On-site AV Person

Do you need an XLR audio feed from the soundboard? Maybe an SDI hookup so your camera feed can appear on screen? Take a wedding photographer for example, both audio/video (AV) and photo folks will have supporting media that you will want access to, so be willing to share and cooperate. Regardless of what you need from the AV staff, it never hurts to be on somebody's good side, when you're depending on them to be the A to your V.

Looking professional is an important part in making a client happy.

## 10 Look the Part

Looking professional is an important part in making a client happy. You want him or her to see that you take this work seriously. Appearing neat, well-groomed and well-mannered will confirm that your client made the right decision in hiring you.

Being a tad overdressed never hurts, as long as it's not at the expense of comfort. For example,

Spare gear is a great idea to bring in a go-to bag. The curious thing is that these may be the least costly but most essential pieces of equipment. Just be sure to pack it better than pictured.

# 13 Keys to Successful Event Video



**Skills aside, your client does expect a professional to show up to the event. The right cases, bags and attire can bring professionalism and safety to your shoot.**

if the job calls for black pants and shirt, wear a great black dress shirt, and even throw on a blazer, at least for your arrival at the event. Use good dress shoes that will allow you to stand all day, pain-free. Many shoe companies incorporate air filled soles to make the experience feel like sneakers, but look like loafers.

If it's a casual affair, it's a good idea to still appear professional. Have a few polo shirts made with your company logo, so you always have a go-to uniform of sorts. Be sure your shirt is tucked in and clean. For most of us, looking good and being comfortable translates to doing a better job.

When you start thinking about looking good, take a look at your gear as well. How do you transport your equipment to a special event? Do you leave it loose in your car and make a dozen trips back and forth from your car to where you're setting up? Do you throw everything into your gym bag and think that's good enough? Consider budgeting for some professional cases from Pelican, Porta-Brace or other professional case builder along with a sturdy flat cart to move your gear. Not only will it make you look better, but it should also keep your gear safe and save you multiple trips to and from your vehicle.

Once you're set up on shoot day, take equal care in putting your cases somewhere safe and out of sight. Your role is to blend in with the surroundings and let your client look good.

**11 Park as Close as Possible**  
Figure out parking before the event rolls around. Don't get caught circling a full parking lot when you're supposed to be setting up. Ask where you can unload your vehicle and see if there is special parking for event staff. Having a nice, close spot will save time and stress in case you need to make any last minute errands.

**12 Rest Up!**  
No matter how straightforward your role at an event may be, a long day of standing still and staying alert can be draining. Even at simple shoots you might run into camera issues, fluctuating audio levels, mysterious sinking tripods and last-minute changes from clients. It's important to get a decent night's sleep, stay hydrated and keep your body and mind feeling good for shoot day. Try to limit caffeine to avoid crashing part way through the day as well, anyone who's been on an 8-10 hour shoot has had moments when his or her eyelids have decided it was time to close shop, regardless of what was happening.

**13 Remember, Have Fun, but It's Their Party**  
Often, there will be receptions and parties that go along with special events. If you are invited, it's important to make an appearance. It's a good idea to be grateful for the opportunity the client presents. Just keep in mind that it's their party - be polite, don't eat the food unless invited to do so, don't overstay your welcome, and keep that lampshade off your head.

**Conclusion**  
Hopefully these tips can help you navigate some of the treacherous waters of special event video. Whether you can use all of them or not will depend on your client, the event and your own workflow, but the moral of the story is to be prepared for the worst and find yourself better equipped to deliver the best. If you can stay calm, cool and professional, there won't be many situations you can't handle with grace and professionalism. ■

Russel Fairley owns a turnkey video production company presenting 200+ videos a year, featuring web videos, television commercials, and live event coverage.

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by Kyle Cassidy

# Tips for Buying a New Camcorder

Credited with the invention of the automobile assembly line, Henry Ford offered his Model T in “any color” he famously said, “so long as it’s black.”

With Ford’s assembly line concept, cars could be built at an unheard of pace. One of the keys to this was standardization.

Trying to pick out video gear from the huge number of cameras and camcorders for sale today isn’t very simple. The market is flooded with both new and used video equipment. How are you to choose from the bewildering array? It’s not an easy decision, but it’s one that shouldn’t be made without considerable thought. If you’re a video professional, equipment is the lifeblood of your business and choosing hastily can mean being stuck with video equipment that doesn’t do what you need it to do.

## Know Your Needs

After Ford’s breakthrough, car companies quickly diversified and today



the road is filled with Mini Coopers, dump trucks, flashy sports cars, vans, station wagons and a plethora of vehicles in between. Video cameras and equipment have diversified as well. There are cameras designed to be carried in a pocket or purse to be ready at a moment’s notice; there are cell phones with video capabilities; there are cameras for professional use with options to add external microphones, on-camera lights and various other attachments. In the last

few years there’s a strange newcomer – the video-capable DSLR, or Digital Single Lens Reflex, which looks odd but offers an incredible array of wonderful features.

## Know Your Budget

Beyond all the bells and whistles, the real key of which of the camcorders for sale to put in your stock-

ing is how much money you have to spend.

## Identify Important Features

What type of videography do you do? This will determine what features are most important to you. Do you shoot a lot of low light videography? You will want a camera with low grain at high ISOs and a fast lens. Do you shoot a lot of sports? A fast auto focus is something you’re looking for. Do you want to strap a camera to your helmet as you bobsled the Matterhorn? There are cameras that do that as well. Other important features might be interchangeable lenses, slow-motion capabilities, or the ability to record directly to an external hard drive.

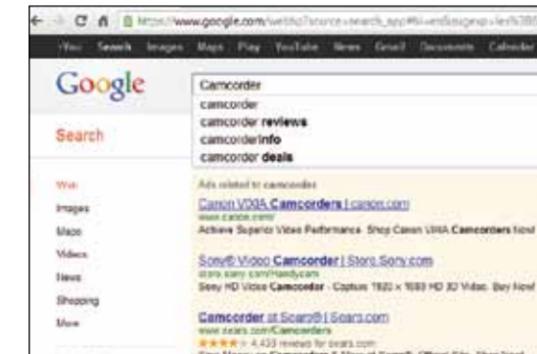
## Stick to Popular Brand Names

While it’s very true that small companies often drive innovation and come up with clever products, until you know exactly why you want that product it’s safest to stick with the major brands who have been producing video cameras and video equipment for years. This isn’t simply because they’re more reliable but also because it’s going to be much easier

to get an extra battery for a popular brand name camera two hours before your sister’s wedding in Mount Horeb, Wis. Most video professionals have a drawer somewhere filled with now useless proprietary power and connection cables whose provenience they can’t even remember.

## Read Reviews

There is a great number of online video forums; (have you checked out the online community at Videomaker.com where people post detailed reviews of equipment?) Amazon.com is a good place to start as well. Be sure to balance reader reviews with those done by professionals, read both and take into consideration the skill level and knowledge base of the reviewer. When googling about equipment it helps to think like a poster in order to find the right information. Searching for “Video Camera X review” will get you more reviews than simply searching for “Video Camera X.” Some good keywords to try out in your searches are, *reviews*, *problems*, *best*,



Adding “review” to your search won’t lead you to a manufacturer for exact specifics, but it will provide feedback from people that either review for a living or care enough to inform potential buyers of a camera.

*great*, *worst*, and *FAQ*. And remember, cameras are all different beasts – the reason that one person may hate their camera or rate it poorly might be a reason that you’d love it. Search also for keywords related to the work you do. “Best camcorder” isn’t as good of a search term as “best camcorder for wedding videography” or “best camcorder for travel.” Don’t neglect terms like “battery life” or “ergonomics.” Think of



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This is the full packed contents of a Panasonic camcorder. Some dishonest resellers remove crucial items like a battery or charger, which are detrimental to your production and might be sold separately.



terms you'd put into your own review of a camera and look for those.

### Buy from a Reputable Store

Good camera stores not only have a lot of camcorders, used video production equipment, and accessories for sale, they also have knowledgeable sales staff. Shop in a store where the person behind the counter can clearly answer your questions and steer you towards the right purchase.

### Buying Online

There are a number of online stores with years of experience and excellent customer service who are used by video professionals every day. There are advantages and disadvantages to this. The major advantage is that a lot of these

stores can sell items at significant discounts. The disadvantage is that you can't pick up and try out the cameras first. Many stores both online and brick-and-mortar, have most of their cameras for sale at prices actually less than what they paid, this is known as a "loss leader" they'll entice you to buy your video cameras with a low price and then make up for it by selling you a camera bag, lens tissue, battery charger and tripod and make their money in that markup. So when comparing prices, be sure to look at the prices of all the video gear you're interested in.

Many people think that buying online means buying tax-free which isn't always the case. If you live in a state that has a sales tax, you're required to pay the sales tax on your own at the end of the year. This is called the "use tax".

### IF YOU'RE A PROFESSIONAL MAKING INCOME... YOU CAN DEDUCT ALL OR PART OF THE COST OF YOUR VIDEO GEAR ON YOUR SCHEDULE C.

Remember too that if you're a professional making income from your video work, that you can deduct all or part of the cost of your video gear on your Schedule C.

### Make Sure You Know What You're Buying

There are a whole lot of reasons that a camera might not ship with everything you expect it to ship with or need. When comparing prices, make sure that both camera outfits are identical. Do they both include chargers and batteries? Are lenses separate?

### Conclusion

You should expect a camcorder to live with you for several years, and it's an expensive purchase so go into it armed. Searching online for the experiences of people who do video work like you do and reading about their positive and negative experiences can really help when you're picking out your equipment. ▄

Contributing Editor Kyle Cassidy is a visual artist who writes extensively about technology.

For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15391 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15391](http://www.videomaker.com/article/15391)

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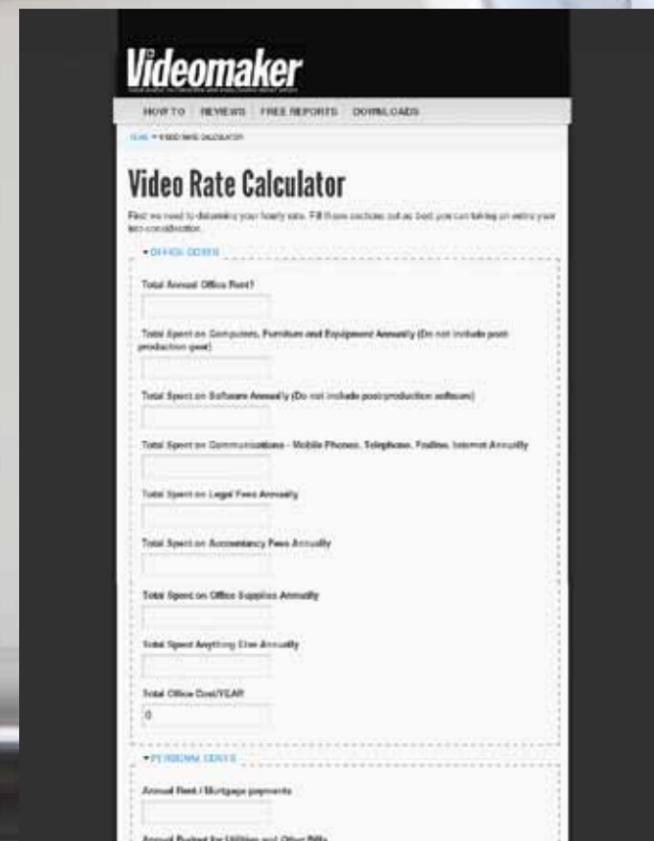
# How Much Should I Charge for Video Production?

It's the biggest question when you're just starting out, but even long time professional freelancers struggle with this seemingly simple question. You know that your time and work is valuable, but how valuable? **How can you keep your prices competitive without cheating yourself?**

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- Keep your prices competitive so your clients come back again & again

## Remove the guesswork with Videomaker's free Video Rate Calculator.



Read the article on page 64! Visit [videomaker.com/rates](http://videomaker.com/rates) to get started

by Tony Gomez

## Video to Your Smart Device in 3 Steps

Maybe you've been capturing HD video with a camcorder or DSLR for a while. Here are some tips to sharing that video using your smartphone or tablet.

In the past we would have recommended making DVDs, but with today's smartphones and tablets in use by seemingly everyone, these new smart devices have become the most convenient method to share your video.

But how would you go about transferring your captured video to formats that are compatible with Android-based smartphones or tablets, or the iPhones and iPads from Apple?

We tested out a wide variety of smart devices, including the latest iPad (third generation) and iPhone 4, as well as several popular Android-based smartphones, and various other Android-based tablets. Our transfer tips for you are highlighted in three-step processes.

### Step 1: Getting Your Files Converted into Compatible Formats

HD camcorders and DSLRs shoot video in the AVCHD (MPEG4/H.264)

HandBrake is a free option for video transcoding, which is perfect for moving video across platforms by changing a video file's format to the necessary type.



format. While the AVCHD video file is high definition, it requires video conversion and compression to be playable on the smart devices. There are several software compression programs available. Some of the popular ones for Windows OS we've used are Arcsoft's MediaConverter 7.5 (\$40) and Sorenson Media's Squeeze Lite (\$299). A third application, HandBrake, is free and cross-platform. There are many presets in these applications, each one designed for

a specific smart device category. In general, the end result will be in the MPEG4 file format.

We like MediaConverter 7.5 for Windows, because its visual interface is easy to use. You start by selecting the video source (the clapboard icon), and then select your output device. There are numerous output devices symbolically available: iPad, iPod Touch, and various Android-based phones or tablets. Once the output device is selected, you choose the settings button to affect the video and audio quality of the conversion. While many quality settings are available, we use Smart Fit, and keep the aspect ratio because that will give you good quality the first run through. Better quality videos can be encoded at 4MB/s/720p, but that creates a greater file size. Once you can see your video in the interface screen, simply click on start to begin the process. The conversion process is single pass, for the fastest processing time. Format conversion is a very computer intensive process, so it could take some time, depending on the speed and power of your computer. Multi-core processors are highly recommended.

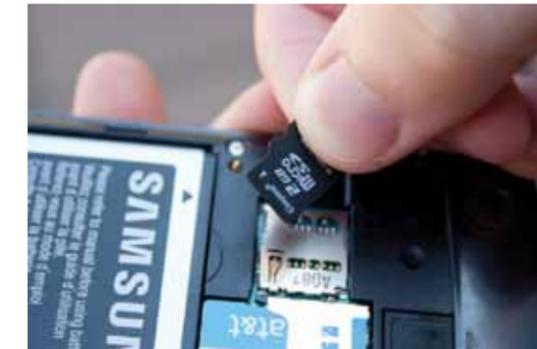
Sorenson Media's Squeeze Lite for Windows is a powerful application that allows even more control on your video conversion parameters. When selecting Android or iPad compatible devices, you have a choice of different conversion quality settings. The trade-off is quality vs. file size. Squeeze Lite also offers a two-pass conversion process, which will yield better quality in the converted video, especially if there is motion in the scene. Other conversion applications are generally single-pass. Two-pass conversions take more time. The converted output is in the MPEG4 file format, which is compatible with both Apple and Android devices.

For example, using a 44-second 48MB original MTS video clip from a Sony HD camcorder, and selecting 720p output resolution, and a low 2.5MB/s bit conversion rate, the converted file was compressed down to 1/6 its original size—about 8.5MB. At 3.5Mb/s the quality was a bit better on all devices, but at a larger 16MB file size. At a higher bit rate of 10MB/s, our Android tablet and phones couldn't keep up and skipped video frames.

HandBrake is a very popular open source, cross-platform conversion application that works on Windows PC, Mac OS, or Linux-based computers, and happily, it's free! Once downloaded, HandBrake can be installed. The user interface is very straightforward. Simply select the source for your video file. It supports a wide variety of file types. Next, select the encoding quality, which can be either constant or variable bit rate (variable bit rate adjusts itself with motion detected in a scene to give a smoother result). Finally, select the output device from several listed (iPad/iPhone/Android). The output file formats are in MPEG4.

### Step 2a: Android Solution: Transferring Converted Files to a Compatible Memory Card

Once your video has been converted into a compatible format, you've got to transfer it to a compatible memory card for your Android smart device. You will need an SD/SDHC, or microSD/microSDHC memory card. We've seen some 32GB microSDHC (PNY 32GB Hi-Speed microSDHC Class 10, retail, \$70) cards for much less than \$40. The one to use is a microSD card which comes with an SD card adapter. This allows you to insert the tiny microSD chip into the adapter for use when transferring files on your computer. Android smartphones generally use the microSDHC memory card, and the slot for the memory



Hidden near the battery, many smartphones carry a microSD card. The inconvenience is having to remove the cover on your phone - less elegant than with a tablet.

card is either on the side of the phone, or inside the back cover. However, it might be inconveniently located below the battery compartment. Android tablets generally have side slots, and use either microSD or full size SD cards, depending on the model. A Sony Tablet S uses the full size SD/SDHC card.

The easiest way to transfer the converted video file to the card is to insert the adapter with microSD card into a USB memory card reader, then simply transfer the converted video file into the card.

THE SLOT FOR THE MEMORY CARD MIGHT BE INCONVENIENTLY LOCATED BELOW THE BATTERY COMPARTMENT.

### Step 2b: Apple iPhone/iPad Solution: Transferring Converted Files

Connect your iPhone or iPad to your computer with the USB cable. You must use iTunes for the transfer/syncing process, and it's a good idea to have the latest version running, 10.6 in our case, especially since we wanted to transfer videos to the new iPad (third generation). From the iTunes menu, select Movies, and then from the File Menu, select Add File to Library. Select the compatible MPEG4 file you want to transfer, and then click SYNC. After a short while, a video icon will appear in the Movies Folder of the iPad, indicating that the transfer is complete.

### Step 3: Playing Back Video

Most Android devices have a built-in application called the Gallery media player. Select the Gallery icon, and click on external SD card icon. This will display the video clip icons located on the

It's not an evil twin, but rather a great companion for sharing video, the Wi-Drive preserves your smartphone's memory and data space and lets you watch video. Similar to how a RAID can speed up editing.



SD card. Click on an icon to play it. Note that because of some differences in playback capability from one Android phone or tablet to another, it's possible to have some video files that will play on one device, but not on the other. It may take some additional work to find the right conversion that works for your Android device. You can also download another media player app from the Android Store, VLC Direct, which works with a variety of file formats.

With Apple i-devices, your transferred video files are played back from the Movie folder. From the main interface of your i-device, select the Video icon to access the Movie folder. At 720p resolution, the videos looked outstanding on an iPad with its higher resolution Retina display.

### The Streaming Alternative

Since video files take up a huge amount of precious memory on your iPhone or iPad device, you might want to consider using an external streaming solution. This is great because you stream video to your iPhone or iPad, but don't load it on the device, which would eat up internal memory.

The most elegant streaming solution for your iPhone or iPad is from Kingston with its

Wi-Drive. It's both wireless storage and a cross-platform file sharing device. And it's conveniently small, about the footprint of a small smartphone, and just as thin. First you install the Wi-Drive application on your iPhone or iPad, which is free from the Apple App Store. Then you run the application and set up streaming between the Wi-Drive and your iPhone or iPad. Next, using a provided USB cable, transfer compatible video files to the Wi-Drive. Once the files are on the Wi-Drive, go to your iPhone or iPad and locate and select the Wi-Drive, within your wireless networks. Once the Wi-Drive is streaming to your iPhone or iPad, you select whichever video you want to play. And you aren't taking up any memory on your iPhone or iPad. The Kingston Wi-Drive comes in a couple of capacities, 32GB (\$164) and 64GB (\$228).

While the Wi-Drive solution is great for iPhone or iPad devices, it often falls short on Android-based phones and tablets. The problem comes from the fact that there are issues with many different manufacturers of Android phones and tablets, and it's not as standardized as the Apple universe for iPhones or iPads. Kingston has come up with a work-around for this incompatibility with an update to the firmware for the Wi-Drive. With the update, it now allows you to access or stream the contents from the Wi-Drive directly to your Android phone or tablet using the Web browser feature. To download the update, go to [www.kingston.com/support/wi-drive](http://www.kingston.com/support/wi-drive).

### Conclusion

Everyone probably knows that uploading to YouTube is the "everyman" solution for getting video on your smart device. It's easy to use, but you can achieve higher quality results with the tips we've given you here. Now you just need to learn tips for shooting for the small screen - an art unto itself!

With all these new incredible iPhone, iPad, Android-based devices at our disposal, there's no reason you shouldn't be sharing the "best moments" of your archive of video shot with an HD camcorder, or older. With these apps discussed here, it's fun and easy! 📺

Tony Gomez is a veteran producer, editor, videographer, digital photographer, and reviewer of consumer and professional digital imaging and video products, with more than 30 years experience.

For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15633 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15633](http://www.videomaker.com/article/15633)

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by Pete Shaner

## Directing Stunts for Green Screen

Hollywood creates realistic stunts and effects using green screen tricks. Using shots with dynamic motion and perspective, you can make movie stunts just like the pros.

Green screen is a cool technique and it makes movies magical. Everyone knows the special effects and stunts in movies like *The Avengers* and *Spiderman* were created using green screen or blue screen backgrounds and computers. Those same digital tools are available in almost all video-editing software and when used properly they create some pretty amazing stunts. The secret for getting believable stunts is to visualize and plan your shots in a very specific way. We'll review some green screen basics and then show you the simple steps for creating Hollywood-style action in your own projects.

### A Quick Review

Before we get started, let's review the basics. Green screen works because your computer selects a certain color and makes it transparent. So when you use a green screen background, the computer ignores the color green.

Having some sample footage on a monitor of the effect your actor is supposed to be reacting to can help you direct the actor better. Should he look left? Should shadows be on his right? A visual guide helps tremendously.



You then separate the image of your actor (or any other subject) from the background and place it on top of a different background.

Making the green screen transparent is called keying, and combining different images is compositing. The image of your actor is the foreground plate (or element), and the image of the new environment is the background plate. For the rest of this article, we'll assume you can shoot your subject in front of a green screen, pull a key for the foreground element and composite the foreground and background plates into a single image.

### The Secret

The most basic green screen composite (or chromakey) involves a static actor in front of a static background. You see this on television every night when the news composites the weatherman with the next day's forecast. It's not a very creative special effect, but it's the same technology and technique Hollywood uses for green screen movie stunts. So what makes their effects shots different from the evening news? Motion and perspective.

Here's a secret which allows you to create dynamic action shots with a green screen: break away from static, two-dimensional foreground, and background plates. Just remember your character lives in a three dimensional world, and that world is in motion. Green screen does more than put a cool background behind your character; it places your character in a different and dynamic world. And if you're designing a stunt, motion and perspective in your composite create the illusion that your character is doing something dangerous.

### The Steps

Using motion and perspective when you create a green screen action

shot involves four key steps. We'll examine each of those steps in detail, and then give an example of the process by re-creating a stunt from the classic Alfred Hitchcock film, *Psycho* where a character falls down a flight of stairs.

### Step One: Visualize the Stunt

Before you plan and shoot your elements, you need a good idea of what the final shot will look like. For instance, what's the character doing? Is Wonder Woman scaling the outside of a building? Is she flying through the air? Is she falling down stairs? As you visualize the stunt, think about how the character moves in relation to the world around her or him. Keep in mind it's a three dimensional world. Characters in the real world don't just move left and right, they also move

### PROTECTING YOUR ASSETS

Remember, whenever you're working with people, whether you're directing film talent or working with paid crew or volunteers, you must protect yourself and your business from potential litigation or loss. Nearly every business has some form of insurance that covers everything from accidents to theft, but many video producers are sadly under-protected. It's more than just losing your camera to damage, it's possibly losing income due to delays, or losing your business due to lawsuits. At the very least, you should have everyone who is working on-camera sign an actor's release form or a model release form. To protect yourself even more, especially if you're using people for stunt work, you need some type of film producer's insurance.

**Videomaker** has simple model release forms available, and you can read more on the type of insurance a video production business might need in our story *Risky Business – Film and Video Insurance* feature. For more video production business forms, check out the **Videomaker Complete Book of Forms**. You can download some parts individually from our website, or the entire book; or receive it the old fashioned way: through the post office.

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towards or away from the camera.

And how does the world around the character change during the shot? If the hero is flying, clouds and trees zip by beneath him as he soars over the landscape. In the *Psycho* example, the character moves through space as she stumbles backwards down the stairs. We'll create this movement in the background plate.

### Step Two: Break It Down

Once you know what the shot looks like, figure out how you're going to shoot each of the elements. What action is the actor performing in front of the green screen? And how do you block and shoot that action? Remember, the only thing that matters is the actor's image on camera, so you can turn the camera sideways or even upside down to get whatever orientation you need for your shot.

And you have to plan the background plate as well—as your character moves through his or her environment, the background changes. In our example, we want the effect of the ground rushing up towards our actor. We'll create this effect by moving the camera down the stairs.

### Step Three: Shoot the Elements

It's usually a good idea to shoot the background plate first. That way, you know exactly what the world of your character looks like. Then when



**Figure 1**  
Speed was an important element of our background plate. Finding just the right speed to sell the illusion of falling took some trial and error.



**Figure 2**  
Since the stairs on the background plate were shaded, we shaded our actor when we shot the green screen. We also made our character lean backwards so her hair and earrings would fall in a natural manner.

you shoot your foreground, you can make sure your actor fits in that world (check if it's sunny or cloudy, and for any shadows in the actor's environment). And when you shoot the background first, you can use it for reference on set when shooting your actor.

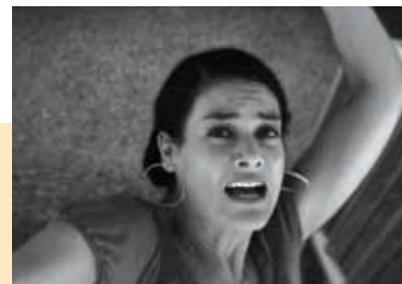
Pay attention to all the standard rules of green screen techniques when shooting the foreground element (usually your actor). Make sure the screen is evenly lit and watch the boundaries of your green screen; nonetheless, make certain no part of the actor extends beyond the area covered by the screen. Above all, match the lighting environment that exists on the background plate as closely as you can.

### Step Four: Create the Composite

The final step in finishing your stunt is creating the composite. If you've shot the green screen carefully and can pull a good key, this is fairly straightforward. But there are always details you can tweak. You can change the size of your foreground element by scaling the image up or down. And depending on the nature of the background (and whether it's interior or exterior), you may want to slightly defocus or blur the background plate. The bottom line is that adjusting each of your elements in subtle ways creates a more convincing composite.

### Falling Down the Stairs

Now let's look at our example. In



**Figure 3**  
In this still from our recreation, notice how the actor's body is angled away from the camera and down the stairs. This subtle positioning gives the shot a more three dimensional feeling. When we made the final composite (above) we scaled up the image of our actor which made her slightly larger in frame. We also applied a subtle blur to the background which gave the image more depth.



**Figure 4**  
Scene of actor falling down stairs in the original movie "Psycho" movie.

we visualized the stunt. Actually, Hitchcock did this for us—we want the camera following our character as she falls. To create this illusion, we shot a foreground element of our actress losing her balance and a background element of movement down the stairs. Figures 1 and 2 show our director shooting each of those elements.

The final step is pulling the key and compositing the elements. Figure 3 shows a still from the final composite. We made the sequence black and white to match the original stunt. Compare this shot with a still taken from the film, Figure 4. How'd we do?

### Go Shoot Some Stunts!

So now you know the secrets and steps for creating exciting stunts and action shots using green screen techniques. Your main challenge as the director is visualizing the stunt in a dynamic way. Remember that appropriate motion and dynamic perspective create visual elements you can weave together in compelling three dimensional composites. But it all starts with visualization; the more creative your initial concept is, the more convincing your final shots.

One final word about safety: With green screen, you create the illusion that your actors are doing dangerous or impossible stunts. Never forget, however, that stunts are simply illusions. Don't put your cast or crew in a potentially dangerous situation no matter how spectacular the shot you're imagining. No stunt or effect is ever worth the risk of injury. ▮

Pete Shaner has an MFA in film production from USC and is a Film/Video instructor at the UCLA Extension. A motion-picture writer-director, Shaner's credits include several independent features, award-winning short subjects, and narrative films. He has written for the TV series *JAG* and worked as the on-set technical advisor for *A Few Good Men*.



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### GOING TO THE NEXT LEVEL

So far we've looked at very simple composites, involving only two elements: the foreground and the background. But composites in Hollywood effects shots often have dozens of elements all layered together in complex visual illusions. Filmmakers often add individual buildings, or other elements, to the background when they create unique locations. And by layering in active elements such as explosions, fire and smoke, they create even more dynamic action shots. Many of these elements are pre-made (sometimes called *canned*) and already exist within your editing software. You can easily add them to your own composites.

And when you're using multiple elements within the same shot, it's important that those elements move in unison as the perspective of the shot changes. This involves an advanced technique called camera movement tracking (or motion tracking), which is generally only available in higher-end compositing programs like Adobe After Effects. If you're serious about mastering the art of creating complex composite shots, you'll need to be familiar with motion tracking.

Another advanced technique that helps you pull better keys is the use of a garbage matte. Basically, this is a rough outline drawn around a visual element which blocks out parts of the shot you don't want to see. Knowing you'll use garbage mattes in post-production can help you shoot green screen shots even when your screen doesn't cover the entire background.

by Chuck Peters

# Transition Effects

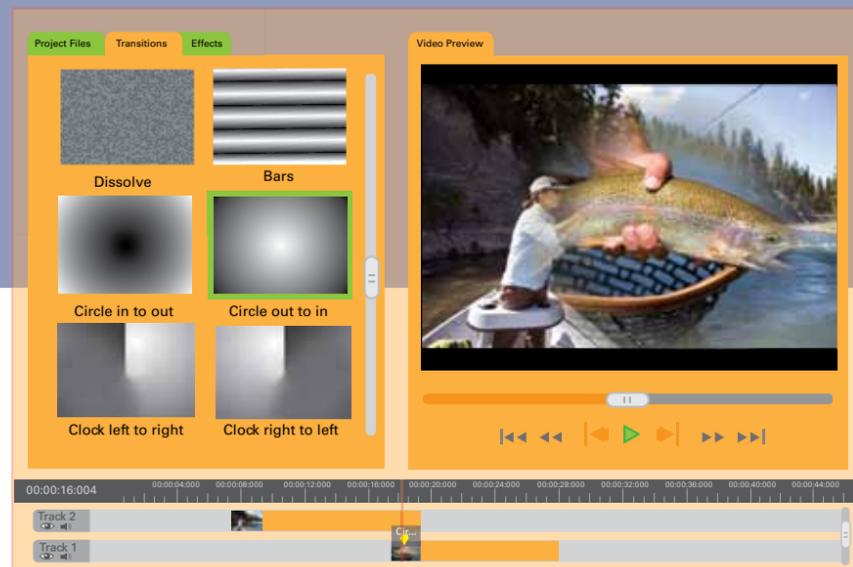
There's much more to visual communication than simply slapping a series of shots together. With video, you need to think about the way you connect your shots.

When we think about writing we tend to focus primarily on creating strings of letters to make words and strings of words to make sentences and groups of sentences to make paragraphs. We do not often think about the importance of spaces and punctuation.

*but without spaces and periods and commas and question marks and capital letters you end up with a confusing combination of characters that can be difficult to decipher*

Translation: "but without spaces, periods, commas, question marks and capital letters you end up with a confusing combination of characters that can be difficult to decipher."

It's true. When we read we don't often think about the spaces, commas, hyphens, apostrophes and periods on the page, but without them we quickly become confused. They are essential aspects of reading and writing. While our brains are actively processing words, sentences and paragraphs on a conscious level, our subconscious minds passively dance over the gaps



and punctuation marks, adding understanding that allows us to accurately interpret the intended meaning of the writer. While most of us never stop to contemplate the importance of those gaps, marks and squiggles that we use when we write, the shared unconscious understanding of what they mean is absolutely essential for there to be communication that breeds comprehension.

*If a writer were to substitute periods for commas, or commas for spaces, or "randomly" use "quot" A t i o n (marks) or as Terisks \* in \* non#tradiTional\*waYs\* the-reader-might-cOnclude)that&the-writer + was + on-the-brinK \*of^insanity%*

We think you get the point: There is a lot more to written communication than stringing the right letters together. The way we connect the words we use is an equally important part of clear communication, and in a similar way, you need to think about the way you connect your shots to communicate clearly through video.

For years, we have taught that the transition effects that we use when we edit TV, film and video are like the punctuation marks we use when we write. Cuts, dissolves, fades, wipes and visual effects transitions all carry meaning that unconsciously communicates comprehension to our viewers so they can understand the relationships between the shots and scenes on their screens. Most viewers are as unaware of transitions as readers are of spaces. Whether our viewers can explain the use of transitions or not, on a subconscious level, they have been conditioned to understand what they mean. There is a language to the transitions we use in our videos. As producers, we need to know what we are saying with our transition choices to stitch our shots together effectively.



Cuts keep the time and place, and can trick viewers into believing your small set, is in this large building.



## Cuts

When used properly, cuts are all but invisible to the average viewer. In his book, *In the Blink of an Eye*, Walter Murch refers to the cut as the "eye blink" of editing. The cut is unique among transitions in that it doesn't occupy any time. Where dissolves and visual effects transitions take place over a span of several frames, a cut is instantaneous. It is a switch. While a cut doesn't occupy either space or time, it can be used to manipulate both. In effect, the cut connects things in space and time even if they are separated in the real world.

When a cut is used between individual shots of two people having a conversation (in an interview for instance,) the viewer believes the two are interacting in real-time. In reality,

they may have been shot on the same set, but on different days.

The cut also connects exterior shots with interior scenes. So if we see **shot A** of the outside of an office building, followed by **shot B** of a businessman talking on the telephone, the cut leads us to believe that the office of the executive in **shot B** is inside the high-rise shown in **shot A**. This high-rise shot would be considered the establishing shot. It establishes where elements are in the scene. This technique is used in TV shows (especially sitcoms) and movies all the time. Often the exteriors are shot on location, and the interiors are shot on studio sound stages. Another example of the cut connecting the disconnected is the glance/object pair. An actor in the first shot looks off camera and we cut

to - whatever we want him to be looking at. The cut connects the two in a way that joins them in space and time, even if both shots were recorded in different places or at different times.

The cut is a powerful tool for the editor. It functions simultaneously as both a razor and glue without drawing attention to itself. Because it is both powerful and inconspicuous, the cut is the most used transition of all, and it should not be neglected by editors at any level. Some say that 95 percent of your edits should be connected by cuts. We might push that recommendation to be as great as 99 percent. For some people, transitions can become a crutch that takes the place of thoughtful editing. There is room to hide a lack of precision in a 10-frame dissolve, but not with a cut. Cuts are

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A dissolve from one shot to another has the power to connect elements. Short amounts of time are implied to have passed with a dissolve, perhaps the time for someone to walk from a courtyard to a studio.

out there for everyone to see. They are the definition of razor-edge frame-accuracy, and they force us to scrutinize our edit decisions.

### Dissolves

A dissolve is a transition in which two clips overlap in time for a period of several frames. During this time the outbound clip decreases in opacity as the inbound increases. The result is a soft, smooth transition. Where the cut connects clips in time and space, the dissolve signifies a short lapse in time or a change of location. Take for example a scene where a man steps onto an elevator and the doors close. We then dissolve to a shot of the same man getting into his car. The dissolve indicates that time has passed and the location has changed. It acknowledges that some of the action has been omitted (and we're glad, because we don't have to watch a long boring elevator ride and walk through a parking lot.) Dissolves work well in montages, highlight reels and title sequences because the shots in these aren't synchronous. But don't readily replace the cuts in interviews with dissolves. Using dissolves between shots in a conversation that is supposed to take place in real-time can confuse your viewers and leave them suspicious that something has been cut.

When you do use dissolves, one important consideration is duration. The duration of the dissolve greatly affects the feel, and appeal, of the edit. Dissolves are artsy elements by nature, so it's difficult to apply a scientific rule to their duration. A short five to seven

frame dissolve is barely noticeable, and can create the effect of a "soft" cut. A dissolve that is 10-15 frames long is conspicuous, but conservative. It does the job without drawing undue attention to itself. Dissolves that linger more than a second, or extend into multiple seconds, create a dramatic multiple-image effect that catches the viewer's eye and functions as a visual effect.

### Fades

Fades to and from black indicate a longer passage of time. Take this example, we see a boy getting tucked into bed at night by his father, the scene fades to black, then fades in again as he awakes the next morning to the sound of chirping birds. The fade to black in this case represents eight or 10 hours of time. Or maybe we see the boy getting tucked into bed, followed by a fade to black, then a fade in on a similar shot of an adult man waking up. This time simple text reads "25 years later." Now the fade represents 25 years of time. And, as viewers, we accept it because we have been conditioned to understand what is represented by that simple fade.

Unlike dissolves, the duration of fades in and out of black has no bearing on the amount of time represented. A second or two of black is plenty long. The most important thing is to fade back in before your viewers turn off their screens or leave the room, thinking the video

is done. (A trick contained in some theatrical releases that can also signify bonus content coming up.)

### Wipes and Visual Effects Transitions

Wipes and visual effects transitions are designed to call attention to themselves. These are the digital video effects (DVE), including pushes, wipes, flips, flops and fly-bys. They also include matte effects like heart wipes, dripping paint, falling sheep and silhouetted people wipes along with those cool professionally produced 3D animated after-market effects that can make you look like an Adobe After Effects expert. There are thousands of them out there. Your editing app is likely pre-loaded with a great selection of them. They are flashy and fancy and they will tempt young and inexperienced editors with their drag and drop simplicity. But, if you want your productions to be taken seriously, you need to approach them



An iris wipe, along with most other transitions, should only be used when appropriate to the production. We are privileged to talk about aperture or cartoons from time to time, thus making an iris wipe a good fit.

## Transitions to Retire

There are some transitions that have been so over used, or are just so blatantly bad, that they need to fade into obsolescence. Here are the nominees:

**The Checker Board** - Sure, it was cool on the TV show *Happy Days* - in the 70s. While the Fonz will always be cool, this wipe went out with feathered hair and the Ford Pinto. King me! Game over.

**The Heart Wipe** - The first time we saw it, it was kind of cute. Sort of the Valentine of video effects. But the heart wipe has been beat to death and it has haunted unsuspecting wedding videos ever since. Wedding videography has grown into a highly specialized category of professional production, and the people who do it for a living hate the heart wipe. For the sake of newlyweds everywhere, it's time we pull the plug on this cliché.

**The Star Wipe** - The star wipe officially jumped the shark when *The Simpsons* had an episode that made fun of it.

Lisa: OK, I finished editing the gardening sequence.  
Homer: OK, from here we star wipe to a glamour shot of Flanders paying his bills, then we star wipe to Flanders brushing his teeth.  
Lisa: Dad, there are other wipes besides star wipes.  
Homer: Why eat hamburger when you can have steak?  
Lisa: I'm taking my name off this thing.

with caution and use them with prudence. What you think will offer you an instantaneously elevated production quality may well make you look like an absolute amateur.

To be clear, the problem with these effects is not the effects themselves, it's the misuse and overuse of them by amateur editors. When they are used in the right way, wipes, DVEs and 2D and 3D transitions can be used to punctuate a point, signal the start of a significant segment or to top off a top-notch title sequence, and that's where you typically see them used - by broadcast producers.

If you make car commercials or kids' shows (I have produced both!), then all the rules go out the window. If you want to use wacky effects in those kinds of edits, go right ahead. You need all the help you can get. When you're trying to sell someone something or get kids to pay attention to your program, pretty much anything goes. Naturally, our eyes follow movement, so adding some in your transition can be an attention-grabber.

For the rest of your work you would do well to back out of the transition effects directory and lose the link.

### Conclusion

One of the best ways to become better at choosing and using transitions is to study what you see on TV. For the best results, pay attention to national broadcasts, not locally produced programs. Watch a newscast, a sports event, a talk show, a news magazine program, a reality show and a sitcom. As you watch, try to count the cuts, dissolves, fades and special effects transitions. When you see something other than a cut, note why and how it was used. You'll soon start to see that the way you connect your shots says as much as the shots themselves. **!**

Chuck Peters is a 3-time Emmy award-winning writer and producer. He is currently VP of Production at KIDMO/Rivet Productions.

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## AUDIO

by Hal Robertson

## Fix it in Post

Have you ever heard the phrase, "We'll fix it in post?" Depending on how you tackle it, that line could be your worst nightmare or your best friend.

Historically, the whole fix-it-in-post thing was leveraged by directors and producers who knew nothing about what it would take to actually accomplish such a thing. Today, there is a trend toward fixing things in post-production – both audio and video – but now it's based on the knowledge of our tools and what they can do. If you can grab something now and fix it later, wouldn't that be better than a reshoot or not having it at all? So, what can you actually fix in post? Technology has created a variety of new possibilities, along with all the old standbys. Let's take a look.

### Audio Essentials

Audio has a couple of characteristics that determine how it sounds: amplitude and frequency. Amplitude is easy, it is a sound's volume or loudness. You can see amplitude easily in your audio's waveform view or video editors. It's the squiggly lines that run throughout your the waveform. No rocket science here; the higher the line goes, the louder the sound.

Volume or amplitude doesn't mean much if the sound isn't audible. That's where frequency comes in. Frequency is related to the pitch or tuning of the sound. Frequency is determined by how many times per second the pitch vibrates. You might have heard of tuning instruments to A440. The A is the name of a musical note and 440 is how many vibration cycles per second. In fact, frequency used to be measured in Cycles Per Second or CPS. Today,



it's measured in Hertz in honor of Heinrich Hertz. Regardless, different numbers, same idea. Of course, it's unusual to work on one specific frequency. Typical audio repairs concentrate on ranges of frequencies such as the human voice.

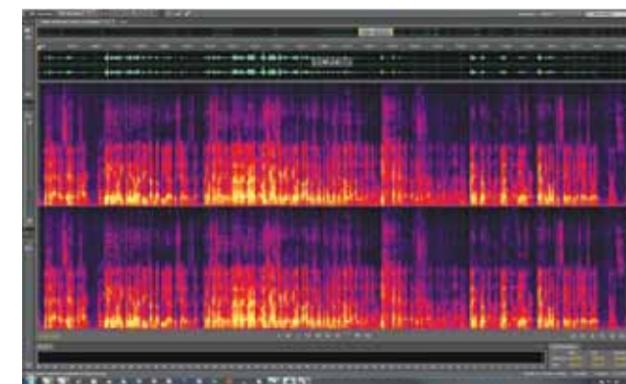
In the grand spectrum of sound, humans have a fairly limited range of hearing. The average range is considered to be 20-20,000 Hertz. That covers everything from the lowest lows to the crispest highs in virtually any music. In just about any audio literature or on pretty much every device, Hertz is abbreviated Hz. Hertz in the thousands is abbreviated kHz. Even if you're new to this, having a basic understanding of the terms and concepts will help when you start fixing things in post.

### Equalize It

Wouldn't it be great to have a bunch of audio

filters in one place to help with repairs? Actually, you can. It's called an equalizer (EQ). Equalizers combine several frequency-specific filters into one device or plug-in. You'll use an EQ when you want to add or subtract a range of audio from your recordings. On one project, you may need to remove some rumble from dialog while another project needs a boost in a specific range. EQ is perfect for that.

You're probably most familiar with the graphic equalizer. Used in everything from 32-channel mixers at



A spectral view is available on some programs, like Adobe Audition, which isolates different frequencies and allows you to edit them.



This window shows lots of sliders and plenty of power to adjust the different tones marked by values of Hz in this graphic EQ.

stadium concerts to your car stereo and MP3 player, graphic EQs allow you to easily shape the tonal quality of your audio. Graphic EQs typically divide the frequency spectrum into ranges or bands and each band has its own controls. An average graphic EQ might have anywhere from five to 31 bands offering either very simple or very specific control of your sound. We don't need to spend a lot of time explaining their operation either - you simply raise or lower one or more frequency bands to affect the sound. But go easy. If you're making drastic changes to achieve a listenable result, something else is probably wrong.

Another type of equalizer is the parametric EQ. Rather than divide the sound into specific frequency ranges, a parametric equalizer allows you to choose the frequency or frequencies and adjust accordingly. A typical parametric equalizer might have between four and six bands, but each of those bands is completely adjustable. Not only can you raise and lower the audio content in that band, but you can pick the frequency and the width of the band. A wide band impacts a larger portion of the sound while narrow bands have a more surgical effect. Operation of a parametric EQ isn't quite as intuitive as a graphic one, but with a little practice, you'll figure it out. It helps to find a plug-in with a graphical user interface, not just knobs. That way, you can see the

impact of your adjustments on the screen as well as hear the results.

### Hiss and Hum - the Easy Fix

Hiss and hum are very common audio problems. Fortunately, they're also fairly easy to fix in most situations using simple EQ tricks. We've all

heard hiss. Those of you shooting with DSLRs may be painfully aware of hiss. When microphones and preamps get pushed beyond their comfort zone (or are just poorly designed), the audio circuit produces a hissing sound. It's distracting and we should try to minimize it.

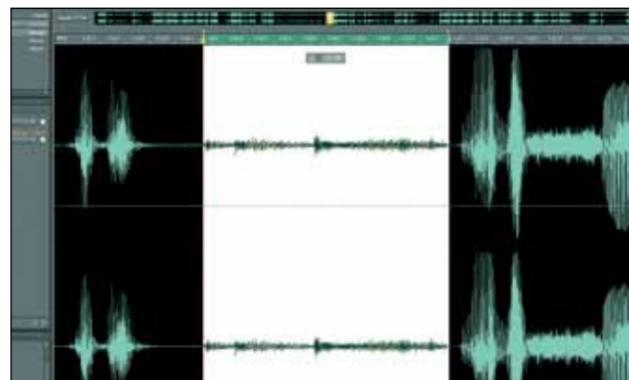
The problem is that hiss isn't one specific frequency. If it were, it would be easy to remove. Rather, it covers the upper range of frequencies, starting perhaps around 10kHz, but extending both above and below that point. To minimize hiss, start by applying an EQ to the audio clip and pull the top band all the way down. You'll probably hear very little change, so pull the next band down and so on until you find a good balance of hiss removal and sound quality.

Hum is also a very common problem in audio production. It usually occurs when audio equipment gets its power from multiple sources. In the United States, hum sits at 60Hz. In Europe and other countries, it may be at 50Hz. Regardless, since it lives in one place

in the audio spectrum, it should be easy to minimize. This time, a parametric EQ is the tool of choice, so you can specify the exact frequency, establish a very narrow filter and cut most of the hum in one pass. During the shoot, you may also find hum at a lower volume in multiples of the frequency. If so, set another narrow filter at 120Hz. The nice thing about these notch filters is that they affect very little of the surrounding audio - helping keep the audio as clean as possible.

### Other Tools

While EQ is a great place to start, there are other tools that can make a huge quality difference when doing audio cleanup. The first is noise reduction. Depending on your audio or video editor, this feature may be built-in. Otherwise, it's a third-party plug-in of some type. Regardless of brand or application, most of them work the same way. You start by finding a second or two of "silence," in which the only thing you can hear is the unwanted noise. Select the noise sample - usually longer is better - and ask the noise reduction program to analyze the sample. This creates the noise profile that identifies what you want to remove. Finally, you apply the process to the entire file or clip. Depending on your noise reduction program, you may



The white area shows what will be sampled by the software and removed from the entire clip, so be sure to select the best example of what should be removed.

have a virtually noise-free recording very quickly. If not, you may have to tweak things a bit and try again. Even at lower settings, noise reduction can be a powerful audio repair tool.

Another cleanup trick is the use of an enhancer. The techniques they use are as varied as their brand names, but most enhancers add high-end sparkle and low-end punch to a final mix. Aphex and BBE are the big players in this field, but several others have found ways to perform the same task. Typically, high frequency enhancement is done by adding a bit of distortion to the highs. Usually,

YOU MAY HAVE A VIRTUALLY NOISE-FREE RECORDING VERY QUICKLY.

we don't want distortion, but this carefully shaped distortion creates the illusion of added clarity. Low frequencies are often improved using time-delay techniques and dynamic equalization. Regardless of how they do it, enhancers are a nice addition to your audio cleanup kit.

### Doing the Fix

Editors often cringe at the phrase "we'll fix it in the mix," but the reality is that you can fix a lot of things with some simple audio processing. Learning the built-in tools found in your editors are a great place to start. Once you're comfortable with their capabilities, add to them with plug-ins. Whether you take sound from video or record it fresh, this allows you to customize your editing workflow and find the best path for your next audio cleanup. [f](#)

Contributing Editor Hal Robertson is a digital media producer and technology consultant.

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The video business is so unlike most businesses when it comes to “how to pay” and “how to charge” for services. “It depends” is a big factor - shooting rates or editing rates? Do you charge for set up and pre-planning time or not? A rate calculator will at least get you started.

As you're honing your skills with video, you may, at some point, be asked to do freelance video work for someone else. You know as well as anyone that video production is a skill that has value, so when you're asked what your rates are, you'll want to be ready with a number.

All too often, new videographers are eager to work for free in order to build their demo reel. *Don't do it!* Unless it's for friends or family, your potential client is surely expecting your services to cost something.

## How to Calculate Your Rate

Videomaker has put together a video production rate calculator to help you determine what to charge. This calculator, at [Videomaker.com/rates](http://Videomaker.com/rates), is designed for individuals who plan to do freelance work as their main source of income, but even if you only plan on doing video once in a while on the side, there are a few takeaways here.

The main one is that you should charge for your equipment. Even if you're okay with not charging for your time and labor, your camera and editing system are necessary pieces of gear you need to protect in order to work. Being able to pay your credit card bills or business loans ensures that you'll still have your gear the next time you want to shoot. Our rate calculator not only covers how much your personal time is worth on an hourly basis, it also takes into account special charges that may only apply to a single project. For example, if you need a cherry picker for a high angle shot in your next music video, the rate calculator will take that into account.

## Billing

Now this calculator is cool for getting the basics set up, but pay attention to what you would call *billable hours*.

Your billable hours can vary tremendously. For instance, are you going to charge the client for the time you are getting your gear set up, or just the shoot itself?

You also might charge a higher rate for shooting, which takes more physical work and gear usage, and charge less for editing the video, which usually requires many more hours of work than shooting. And we all know how much behind the scenes work there is involved in a shoot - many a shooter has lamented the fact that they spent more hours discussing how the shoot was going to take place rather than the shooting experience itself due to a new or uninformed client who needed to be walked through every step. Try to remember to track the administrative and project management time; even if you write “No charge” on the invoice your client needs to know that it's not all magic, there's lots of your hands-on involvement in every project. If you do charge for this, use a lower rate and they should understand. Let them know the facts up front, so you aren't left holding the bag with no pay, and the client isn't blindsided without an understanding of what a video project involves and costs.

## Will Work For Free

We often hear from readers who do many videos for companies for free - for the love of shooting video - and they don't want to be bothered with trying to manage paperwork from in-



Enter a number in every field, even if it's 0. At the end, you'll have an appropriate rate for your video project: [Videomaker.com/rates](http://Videomaker.com/rates).

voices to taxes. Many others say they charge a minimal amount for services to justify paying for their gear.

So let's assume you're not still paying off your camera, you really love doing video, and you have all the time in the world. You really should charge something reasonable anyway. The reason why charging for your work is important is because every time someone does video work for free they are devaluing the market. Think of the producer that was passed over because the client was sure they could get someone new to videography to do it for free. You might be in their position some day. This kind of thing happens all the time with video, graphic design, and art. It's a side effect of these very fun fields to work in! //

Mike Wilhelm is Videomaker's executive editor.

For comments, email: [editor@videomaker.com](mailto:editor@videomaker.com), use article #15577 in the subject line. You can comment and rate this article by going online: [www.videomaker.com/article/15577](http://www.videomaker.com/article/15577)

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