

HDV: THE NEXT GENERATION

SONY HVR-V1

The HVR-V1 combines elements of its HDV predecessors, the HVR-Z1 and HVR-A1 in a chassis closely resembling Sony's popular PD 170 DVCAM camcorder. One clear difference though is that it employs three 1/4 inch ClearVid CMOS sensors (vs. 1/3 inch CCDs), which are free of vertical smear and draw less power than CCDs. Each has an actual pixel count of 960 x 1080 but effectively achieve 1920 x 1080 resolution via a unique sampling protocol. CMOS sensors also enable true progressive scanning of 24p and 30p video. However, the video is recorded as 60i using 2:3 pulldown. The CMOS sensors also enable a wider dynamic range than typically possible with CCDs. Slow motion, up to 1/4 normal speed is also feasible, but at somewhat lower resolution, resulting in a softer image.

The HVR-V1 also features a 20X Zeiss Vario-Sonnar HD lens with low dispersion glass. It has a maximum aperture of F 1.6 with 18dB gain at 4 Lux min. illumination. The lens' reach can be extended with a built-in 1.5x digital extender in addition to an optional .8x wide angle adapter. Variable shutter speeds from 1/3 second to 1/10,000 sec. further extend the operating range and applications. A large, retractable 3.5 inch 16:9 colour LCD screen, plus focus assist, both facilitate accurate manual focusing.

In addition, there are also three levels of peaking displayed in white, yellow

and red. Moreover, zebra bars can be displayed simultaneously as can shutter, gain and white balance settings, even when auto-controlled.

Besides the usual list of image parameters HVR-V1 offers black compress as well as stretch adjustment, a tri-level manual knee and auto knee. There is also a contrast enhancer setting for heightening shadows in otherwise dull, low-contrast scenes.

Another interesting feature is CineFrame Matrix which Sony suggests can be used to emulate specific film stocks. You can also even adjust colour temperature somewhat by pressing the menu wheel when white balanced for outdoors. All adjustments including picture profiles can be saved to a memory stick and be transferred to other V1s with it.

Many of these 27 adjustable parameters can be accessed at the push of a button. The V1 has an amazing six assignable buttons.

The HVR V1 has composite, S-Video, component outputs, but they require proprietary breakout cables. There are no BNC connectors, but there are 1394 IEEE, USB and HDMI sockets onboard. Audio-wise, the V1 comes with a shotgun mic which plugs into one of two XLR inputs, with separate level controls.

Up to 63 mins. of HDV or DV, or 41 minutes of DVCAM, can be recorded onto mini-DV sized HDV cassettes, while up to 270 minutes of HDV or DVCAM

HDV camcorders are getting smaller, cheaper, better and with more image control options which can be fine tuned and customised by end users. It is now quite feasible to fine tune the HD image captured by adjusting gamma, colour matrix, knee, pedestal, sharpness, detail levelsin the field, and also save all the settings for later recall and re-use. Several new HDV camcorders hit the market in the latter months of 2006 - for under £10K, with some under £ 5K. Most offered improved optics while all offered multiple frame rates, variable shutter speeds, more AV I/Os and image control.

In the estimation of many this latest crop of HDV camcorders marks the coming of age of HDV as a full-featured, cost-efficient, high quality professional HD origination format. The question for professionals on a budget, but ready to buy, is which camera is best for me ?

can be reorded with the optional HVR-DR60 (GB) hard disk. The disk also buffers 14 seconds of video/audio in memory, which enables the 'pre-recording' fleeting, unpredictable events.

Priced just under £5k (minus hard disk), the HVR V1, manages to capture 1080 60i p, 1080 24p and 30p, plus DV and DVCAM, with one million plus pixel sensors.

All formats and frame rates recorded with it can be played and output from all current Sony HDV VTRs, notably the new HVR 1500, which also plays/ records PAL.

The V1 offers a compact, feature-rich, lightweight HDV camcorder which records excellent 1080 HDV for a modest price. Moreover, it integrates neatly with other Sony HDV, DV and DVCAM systems and hence provides a convenient upgrade pathway for pros heavily invested in Sony DV, DVCAM and HDV equipment. →



JVC GY-HD 110

JVC's GY-HD 110 is a different beast than the prior camcorders – starting with the fact that its CMOS sensors scan video at 720p/60 natively. The 720p/60 signal can be output live from the camera head, but unfortunately, cannot be recorded at 60 fps. Instead the HD110 records 720p at 30 fps as well as at 24 and 25 fps. By contrast, the other HDV camcorders in its class, (pricewise), operate in interlaced mode, scanning 1080 60i HD using 2:3 and other pulldown schemes to derive 24, 25 and 30p HD imagery. Unlike them, JVC boasts that its sensors meet the ATSC standard for 720p with a native resolution of 1280 x 720 pixels.

The GY-HD110 is also styled quite differently than its lighter weight competitors. It is designed and balanced for mounting on the shoulder, and is longer and heavier, in part because it is designed to utilise full-sized 14.4 volt batteries and a variety of longer, heavier, interchangeable lenses. The current roster of available lenses includes: 16x, 17x, 18x standard zooms and a 13x wide angle zoom lens by Fujinon, plus a 20x broadcast grade HD lens by Canon. It can also utilise assorted 16 mm. and super 16mm. prime lenses with the help of a PL mount adaptor.

This selection of interchangeable high quality lenses puts the HD110 in a separate class. "With HD, lenses are a big deal and choice of lenses affects outcome. It's important to have a selection of lenses for different applications. That's one reason why big market broadcasters and networks are buying HD 110s, 200s and 250s. Every day (ABC's) Good Morning America uses an HD 110 for its opening shot," said JVC's Dave Walton. In fact, the GY-HD110 is being embraced by broadcasters for use on live shots with their microwave remote trucks.

Besides the choice of fine glass the (\$6k) HD 110 can also output a legal 19.7 Mbps HD video signal via its 1394 IEEE ports. "It works so well that it eliminates the need for a \$30-60k encoder", said Walton.

As with its competitors, the GY-HD110 can store an array of user-selected picture parameters on SD memory cards for replicating looks in the future or at the same time, but on the same or related cameras. Both are higher-priced in part because the GY-HD 200 and HD 250 scan and record 720p 60 and 720p 50.

Both also have a 6 pin remote control connector and can output 1080i live or from HDV. In addition the GY-HD250 has live HD SDI output with

embedded audio and TC, Varicam flags, an SD pool feed input and has studio capability with an optional multicore adapter etc...

All three models can simultaneously record several hours of HDV to an external hard disk with at least 12 seconds of pre-record via the frame buffer. The MPEG 2 (HDV) or AVI files can be loaded directly into an NLE without digitising.

According to Walton, the entire GY-HD series reflects a revolutionary approach to camera design. "We're using an open architecture model in designing this camera system with 30 plus collaborating companies developing hardware and software. That's a big factor in their flexibility and value". →



HDV: THE NEXT GENERATION

CANON XH A1/G1

In terms of outright cost, no-one beats Canon's XH A1 HDV camcorder, which lists for just under £4k. This three CCD camcorder has native 16: 9 1440 x 1080 (1.5 million pixels) HD sensors for 1080i imaging, along with progressive 24 and 30 frame output. Its DIGIC DV II HD Image Processor features advanced noise reduction, superior colour reproduction with enhanced dynamic latitude for natural looking imagery. It also enables high quality digital stills.

1/15,000 sec.). With the lens wide open at F1.6, with 18dB gain at the slowest shutter speed they can record 1080/24f in virtual darkness with only .4 lux illumination. The truly flexible 2.8 inch LCD screen simplifies framing the ghostly images in the slow shutter mode.

Total image control is the operating principle of the XHA1 and XHG1 twin cameras. In all, 23 imaging parameters (gamma, pedestal, knee, detail..) can be broadly adjusted, plus 22 different display options and 21 custom function settings which help define its performance and operating characteristics.

These, plus three megapixel digital stills, can be saved to SD and other memory cards, or to a laptop with Canon's new Console software. From there, they can be exported to other XH A1 and XH G1 camcorders, or be further modified. Console also provides vector and waveform monitors and enables remote control of many camera functions.

Two assignable buttons facilitate access to the multitude of menu-driven features. The pricier XH G1 (by £3k), is essentially the same camera under the hood as the XH A1, except for a 'jackpack' which includes HD SDI, genlock and timecode outputs, all essential for remote and multicam applications. Both models can also easily record to Focus Enhancement's FireStore FS-C disk, which can capture 720p and 1080i HDV. Captured clips can be loaded directly into most NLEs (Adobe, Apple, Avid, Canopus, Matrox, Sony, ULead...).

Both camcorders can output composite via a BNC connector and a separate breakout cable, while another cable outputs analog component. There are also direct 1394 IEEE and HDMI connections for inputting and outputting digital video and audio.

The twin XLR audio inputs offer separate level control for both mic and line inputs. Alternatively, levels can be adjusted separately for the twin channels of the built-in stereo mic.

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Canon's New XH A1 & G1

Both the XH-A1 and XH-G1 have a built-in 20x F/1.6 HD 4.5 mm. 90 mm. HD lens (equivalent to 32.5-650mm on a 35mm. camera) with 16 zoom speeds, plus variable and high speed. The lens utilises Canon's enhanced optical image stabilization system for smoother handholding. Auto focus and exposure can be both be overridden manually, the latter down to F9.5. An additional auto focus sensor has improved accuracy and response time.

A truly impressive feature of these camcorders is their ability to operate in very low light partly due to their 14 shutter speeds (1/3 to

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