

In Depth look at the HDR-FX1's features

by Kerr Cook



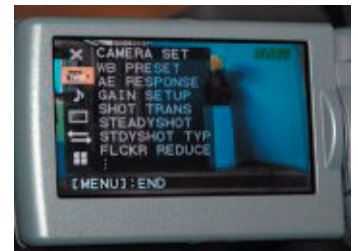
The new Sony HDR-FX1 can be considered innovative in many ways. While it is not the first HDV camcorder for consumers, it does have many features that both set it apart and raise the “hurdle” for others to match. The consumer is the winner.

Starting from the inside out, the heart or rather eyes of this camcorder are the three CCDs. By using 3 CCDs, one for each primary color of light, better color information can be gathered, processed, and recorded than by a single CCD camcorder.

A brand new design, the CCDs will each be 960x1080 pixels in layout. Even more significant than this mega-pixel count is that each pixel will have the size and shape necessary to support 16:9 natively! (In video work, pixels are never square, but vary with each set of standards.) By having the CCD's pixels optimized in shape for 16:9 mode, there will be no “input” resolution lost and no need for interpolation of regular squared CCD pixels into the 4:3 and 16:9 video formats. A small side effect will be that there will need to be interpolation to do the 4:3 mode. This is a minor detail however with the overall much higher resolution of the CCD when compared to the 720x480 DV compatibility mode. This camcorder was designed around HDV which is ALL 16:9 and choosing to make the CCD 16:9 with wide pixels is a tremendous step in achieving the best output quality possible.

The new CCD is a follow on to Sony's Super HAD technology and gives an increased sensitivity in low light without resorting to utilizing gain (which introduces a “grainy” texture defect into the video). The overall rating of the HDR-FX1 is 3 Lux which indicates a good sensitivity and usability in lowly lit situations like the average room indoors at home with room lights on. The esteemed Sony VX2100 has a Lux rating of 1 and the Sony TRV-22 has a lux rating of 5 Lux (both of these are MiniDV camcorders, not HDV and representing a wide swath of the Sony line). While not excellent, the TRV-22 does very well of its class. Since the 3 Lux rating of the HDR-FX1 is between these two, the new HDV camcorder is expected to perform very well indeed.

To see what is being recorded, the flip and swing out 3-1/2” LCD on the camcorder is also in the 16:9 aspect ratio. With 250,000 pixels, this LCD has the highest resolution of any consumer camcorder's LCD. The viewfinder is color and also has 250,000 pixels. However, the viewfinder is 4:3 and 16:9 will be letterboxed in the viewfinder when recording in HDV or 16:9 DV mode.



A toggle button next to the zoom rocker Another innovation is a “focus enhancement” feature of the LCD. With the tap of a button (near the zoom rocker switch), the LCD will have a 4x magnification applied. This is “digital zoom”, but only of the LCD view panel and does not reduce nor affect in any way the recording being made. But by looking at the 250,000 pixel LCD with 4x magnification of the center of the recording, the LCD will allow precise observation of focusing and the depth of field.

Almost every consumer camcorder suffers from the deficiency of having a lower-count LCD than necessary to show the fine detail of the output – in other words the output is usually BETTER and at a higher resolution than the viewfinder and LCD panels on other camcorders so one can't be sure they are setting the manual focus exactly. With the HDR-FX1 and a 4x magnified LCD, the user CAN finally see all the detail that is



being recorded and take action appropriately such as changing the depth of field with the iris, focusing, etc.

When recording, built in image stabilization assists to make the video free from hand- held shaking and vibra-

tion. Whereas digital/electronic image stabilization has some annoying side-effects (“locking” on to an object when a smooth pan is desired, taking some of the overall resolution by “wasting” a border of pixels on the CCD), optical stabilization is superior because it doesn’t need to use the CCD’s area.

HDV recording on the Sony HDR-FX1 is in 1080i interlaced mode. Interlacing allows for a smooth display of motion, with 60 half frames per second. (These half frames are actually two fields comprising the odd numbered horizontal scan lines and then the even numbered ones. By updating half the frame at a higher rate than progressively scanning would, more bandwidth is made available for a higher resolution overall.)

Although there is no easy way to go to “film like” 24 fps, it is considered better to do so from 60i than from 30p. A 30p camcorder must drop entire frames 1 out of 5, resulting in a noticeable “jump” of what should be a smoothly moving object. Indeed, being watched closely is Sony’s CineFrame24 mode of this camcorder, which will use 2:3:2:3 pull down to give this mode. More details will be forthcoming.



HDV uses the same tape transport as MiniDV, a mature technology. The data rate (bandwidth) is the same 25Mbps as DV, but instead of frame independent video, MPEG2 is utilized to compress the much higher resolution of HD data into the same 25Mbps data stream for the MiniDV tape.

This camcorder will make an excellent MiniDV camcorder and is fully compatible with MiniDV in playback and recording, 4:3 and 16:9 modes, with SP and LP (long play) tape speeds. Note that extra interpolation is required when in 4:3 mode, resulting in a slight loss of the CCD’s full resolution potential in 4:3 versus the native 16:9. That shouldn’t be any noticeable problem since the CCD is quite a bit higher in resolution than DV period! In other words, this camcorder will be excellent for MiniDV but that is easy given the HDV design of the unit. Using the HDR-FX1 in HDV will also be spectacular.

The HDV specification does allow for 720p (1280x720 progressively scanned 24, 30, 50, and 60 frames per second). To support the HDV standard, 720p playback is possible by the HDR-FX1 converting everything to 1080i and output this over component analogue outputs. It probably won’t make available as 720p MPEG2 over Firewire. This camcorder won’t record in 720p, but having the playback compatibility is a nice rounding out and shows Sony’s commitment to all forms of the HDV spec.

