HPX500

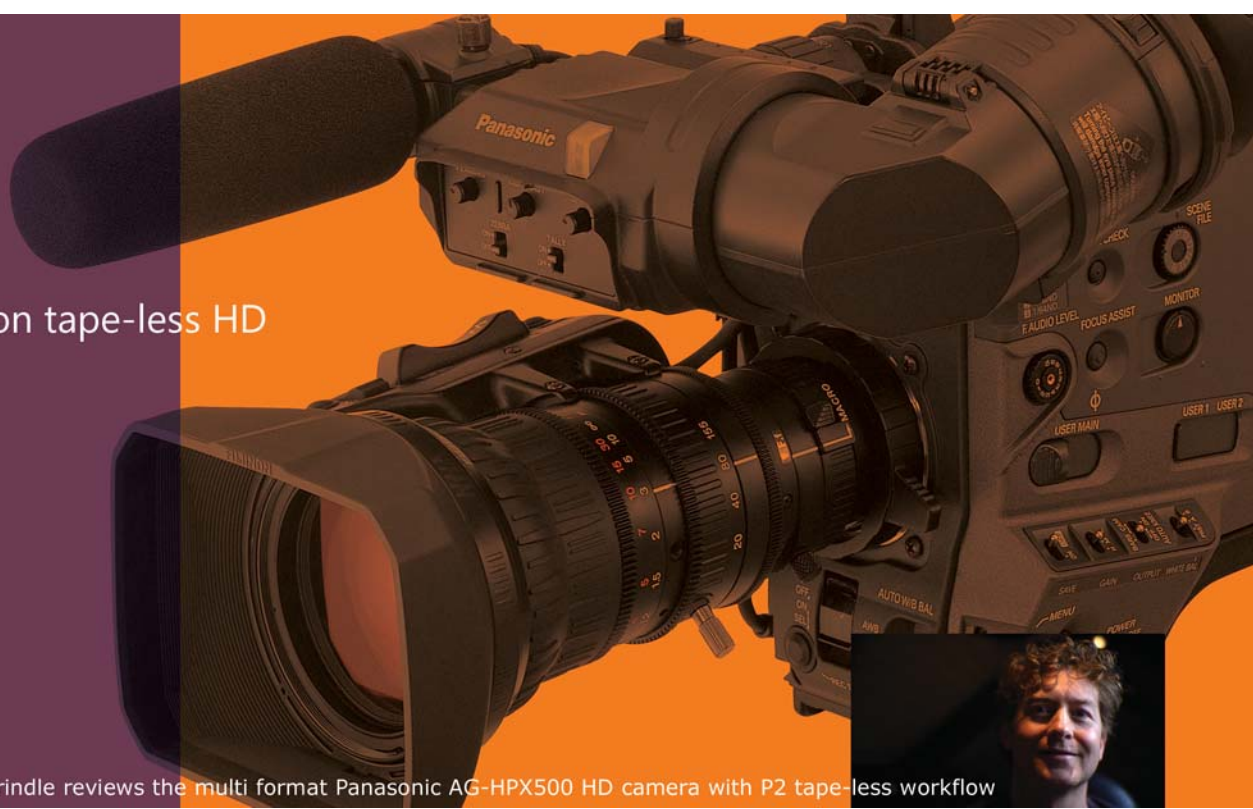## Full-on tape-less HD

Mark Brindle reviews the multi format Panasonic AG-HPX500 HD camera with P2 tape-less workflow

This review covers the new broadcast-size multi-format HD P2 camera from Panasonic with 2/3" CCD, traditional shoulder-mount setup and interchangeable bayonet-mount lenses. The HPX500 sports a very long list of shooting formats from SD to DVCPROHD 4:2:2 at 100MBps and can support both PAL and NTSC 50/60Hz selection and provides both 1080i and 720p. In 720p mode the camera supports variable frame rates from 12fps to 60fps including support for 24p and 25p. The feature list is very long and can be seen in detail at the HPX500 micro website - www.hpx500.eu - what more do you need indeed?

The HPX500 has four P2 card slots, each taking a PCMCIA-sized P2 card. This replaces the space normally taken up by a tape mechanism (i.e. there is no tape mechanism) although we did wonder what we would find filling the gaps inside the chassis! If anyone read my Focus review last year of the Panasonic HVX200 - the first 'small' P2 camera - then apologies for going over some of the same ground regarding tapeless workflow and P2 cards. Flexibility is the key with P2 cards - no tape, fast ingress to an NLE, and multi-NLE support with MXF format files.

When the P2 format was first released, only 4GB and then 8GB cards were available. This year has seen the release of 16GB P2 cards which, coupled with a four-slot chassis, gives rise to respectable shooting times. When shooting at 720p25PN (native mode) with four 16GB P2 cards you will get approx 132-minutes of continuous recording, or at full size 1080i/50i you will get approx 64 minutes without changing cards (or 276 minutes of DV if you wanted SD).

The 16GB P2 cards are now in the sub £500 inc VAT bracket and I suspect the price will fall again when the 32GB cards become available from Panasonic.

P2 is a robust and reliable media – no dropouts, instant playback and easy integration into most popular NLEs such as Avid and Final Cut Pro (FCP). We have been using P2 media for over a year now with FCP (coupled with the Firestore DTE HDD recorder) and once you sort out the backup requirements, you don't really want to go back to tape.

HPX500 Position

The HPX500 seems to have been designed to slot straight in as a direct replacement for many shoulder-mount SD broadcast cameras. Existing battery systems can be used, existing viewfinders and existing 2/3" bayonet mount lenses, too. Although I suspect you would want to upgrade to an HD lens to take advantage of the HD format and special features such as clever software which works with specific lens options to compensate for known lens characteristics such as chromatic aberration (CAC function).

Panasonic supply the camera as a base unit or as a complete package with viewfinder, lens options and battery system – or anything in-between.

Review Background

We received a preview DVD before the camera turned up, which focused mostly on the features of the P2 format and the different flavours of HD supported by the camera. There were no surprises as we have had the same options of variable frame rate and 1080i and 720p with the HVX200 (apart from the switchable 50/60Hz options). I was intrigued to find out what

else was 'new and different' and when Robert Holland from Panasonic brought the loan camera round and demonstrated it, I must admit I was looking to compare it with its little brother, the HVX200.

We were loaned a unit with 2 x 16GB cards, a Panasonic viewfinder, plus a V-lock IDX battery system and standard Fujinon HD lens with zoom/focus control. I won't dwell on the lens or battery system as these are optional, but I was surprised by the lack of a focal-distance readout in the viewfinder (i.e. a distance or a number) - something I was used to seeing on smaller, electronic controlled cameras.

We also managed to borrow a large LCD HD SDI monitor and got to see the latest 8" HD field monitor.

First Impressions

At first look, everything appeared to be where it should be – controls are easy to find and there is a physical knob for a lot of commonly used functions rather then having to dive into the menu system.

The white balance memories and white balance presets are similar to the HVX200, as is the menu system and navigation, so I found it easy to adjust to using the camera. The menu is actually easier to use than the HVX200 since there are more physical buttons to access functions and they have been well spaced.

Robert assured me that if I'd been used to a standard shoulder mount camera, then all the knobs and buttons would be where I would expect – avoiding the learning curve for those upgrading to HD. The operations

manual was missing, however - but undaunted we proceeded to film lots of stuff.

Focus Assist

Focusing in HD can be more difficult then SD - even with a high quality viewfinder - so a special focus assist function can be switched on in the viewfinder. This is different to the HVX200 'center zoom' assist and instead an overlaid graph is shown with a fringing pattern to help identify areas of the image that are in focus.

I must admit that I didn't really like using this feature and would have preferred something like the red pixel focus assist of the new Panasonic 8″ LCD field monitor (LH-80W - subject of a future review!). With the larger 2/3″ CCD and lens the HPX500 does provide a shallower depth of field (DOF) to smaller 1/3″ CCD cameras like the HVX200 but I didn't have too much trouble focusing with just the viewfinder, even with the lens wide open.

Light Performer

I had a busy shooting schedule for the time allocated to us for the loan, and I hoped the HPX would be good in low light as we had some night scenes to shoot for a new sci-fi DVD. I wasn't disappointed in that respect as the HPX was fantastic in low light with no visible gain issues. It far out-performed the HVX200 in low light.

The gain can be switched off completely or adjusted in increments via a switch. The menu allows you to allocate the value of gain to the low, medium and high settings in the same way as the HVX200.

For daytime or well lit environments there is a four position ND filter knob with no ND, 1/4, 1/16 and 1/64 settings. The extra ND settings are very useful as I often have to use an external ND filter when shooting with the HVX to stop it from wanting to be constantly either 1/8 or 1/64 as cloud cover changes.

Sounds Like..

DVCPROHD supports 4-channel audio at 48kHz and so as you would expect the HPX500 provides four independent XLR (mic or line level switchable) inputs. There are four physical level controls with an intuitive method of monitoring (live and recorded) sound and setting each input level. There is a small built-in speaker to monitor audio from clip playback or from live monitored sound. There are two

audio outputs that can plug into an external monitoring system (switchable from channels 1&2 and 3&4) - plus a standard headphone jack (switchable again for all channels).

We got a last minute request to film a live gig one night, so we decided to use the HPX as a locked-off safety wide shot but discovered at the last minute that the audio guys weren't geared up to even record from the mixing desk and most of our kit was still on location for the next night shoot. So we fed a couple of XLRs from the desk into the rear connections on the HPX and setup the levels from the sound check and hoped it would all be fine!

The front two XLR channels have selectable gain of -40dB, -50dB and -60dB (-50dB and -60dB on the rear) and also a selectable headroom of -20dB. Each XLR can provide -48V if required for external mics. There is also a fine adjustment knob on the front of the camera (in a handy position) which can be assigned a variety of channel functions from the menu – such as fine levels adjustment for one of the channels.

Thankfully, the recording was fine from the mixing desk although something went wrong with the recording from an onboard Rode NTG-2 mic we had put onto one of the front channels – very distorted sound even though the levels were fine, perhaps the mic itself couldn't handle the sound level – it was a very loud gig! More testing of the Rode mic needed I think...

Inputs & Outputs

As well as the impressive audio i/o, the HPX500 also has: FireWire i/o (full size 6-pin) to connect to an NLE (or to an external recording device like the

Firestore), and USB2 or FireWire for connecting to a PC or Mac; Component Video out with selectable settings from SD to HD; Composite video out; SDI output including HD-SDI; and connection for the optional Panasonic AJ-RC10G extension control unit.

Genlock input is supported for synchronised recordings plus connections for timecode in and out so that multiple cameras can be synchronised, and these remain in sync with a built-in timecode generator even after the cables are disconnected (assuming you don't switch the power off). Through the use of the SD memory card you can load and save scene files (camera settings) so that multiple cameras can be setup in exactly the same way.

The viewfinder output can be redirected to an external LCD screen instead of to the viewfinder – meaning you can operate the camera without a viewfinder attached at all if necessary. This is via a special cable to a Panasonic monitor, but you will still get zebra bars, etc. and the same graph-based focus assist feature. You can also output to an external monitor using composite, component or SDI outputs (without zebras or focus assist).

P2... Real IT

Panasonic's buzz phrase of 'real IT' is essentially pointing out that no digitization is required once you have captured clips onto P2 media. It's just a matter of file transfer rather then capturing. The latest version of FCP Studio has even changed its own menu item name for the P2 to 'log and transfer' rather then using the existing 'log and capture'.

We have been using P2 cards for over a year and it does

certainly have benefits in speeding up transfers into our NLE. This is achieved either directly via FireWire from the camera or plugging a P2 card into the PCMCIA slot on a field laptop (or in our case via a PCMCIA adapter as the latest Macbook Pro no longer supports PCMCIA cards directly).

Whether the future is P2 is yet to be seen, with the latest RED camera supporting (in theory) CF cards and new SATA plug-in solid state memory HDDs, its seems the future will certainly be solid state memory devices of some kind rather then tapes or disks.

P2 cards do provide different methods of working in different environments – you can span long-form recording over multiple P2 cards, swapping out full cards and keep on recording while someone transfers full cards to a backup device. With the HPX500 you can record some clips to specific cards - Robert did give me a few examples of different work scenarios when this might be useful, but I guess the bottom line is its flexible if you need the flexibility.

Meta data can be loaded and applied to clips – location information, creation time and creator name, for example. This data stays with the clips (in the MXF 'wrapper') and if coupled with a larger storage environment based on the MXF wrapper, then a more seamless archiving system can be achieved than is currently available with other tape-based technologies.

My original background is in IT and having built knowledge management systems in the past I know the importance of good meta data for indexing and retrieval. Until we have good enough image recognition ☞

720p frame grab from HPX500 footage

systems which can identify and classify video content and its context we usually have to rely on meta data in large scale archives.

On a smaller scale we don't need to worry too much about these things – its easy enough to manage your backups even when you have multiple terabytes of video stored. Hard disk prices have been dropping continuously (price per byte, at least) for years so you can usually keep what you need online relatively cheaply even with 100mbps DVCproHD. However, in certain environments where huge amounts of video are being shot each day, I can see a real benefit of keeping meta data attached to clips through the transfer and archiving process.

The only 'gotcha' is managing your workflow correctly. It's simple to transfer direct from P2 card (or Firestore) and then delete your original MXF files from the P2 card. However, in the case of FCP the resulting DVCproHD QuickTime files cannot then be read by, say, an Avid system (see note on end). The Avid can ingest the original MXF files and create files with its DVC100 codec (which is DVCproHD!) but it cannot currently read DVCproHD QuickTime files 'created' (unwrapped) in FCP. So the workflow for full compatibility is to transfer the P2 contents (MXF files) to your HDD and archive the MXF files. You can then transfer into your NLE from the saved MXF files and create your online DVCproHD files (in FCP). Now you have two copies of the data in effect (more storage). This isn't such a bad scenario, as the MXF files (the wrapper and the data) contains all of the meta data – only a subset of the meta data is transposed into your NLE (this depends on your NLE – I believe Avid now support native MXF files whereas FCP does not).

This workflow allows you to quickly transfer files (to empty a P2 card to re-use it) and then gives you time for a more leisurely transfer to your NLE –

where you can review clips before transferring, rename clips, adjust meta data and then only transfer the ones you want. In the future I believe more NLEs will natively support the MXF format for ingest and you will save one step in the process.

Speeds and Feeds

I will admit to plagiarizing some of my original HVX200 review article for this section as it is essentially the same. The HPX500 supports DV recording (PAL and NTSC switchable), DVCPro50, 50mbps SD at 4:2:2 - the forgotten SD format?

As to HD, I will concentrate on the PAL 50Hz variants to cut down on detail. The HPX500 features HD progressive and interlaced - 720p and 1080i, including 1080i50 and 1080i25p (25 progressive frames in an interlaced wrapper) in DVCproHD codec with 4:2:2 colour space. This is not the same as HDV mpeg2 compressed data at 25mbps, but is 100mbps HD which I have found to be better for green screen compositing work and can provide better colours than HDV with none of the motion artefacting that can be seen in HDV. It is certainly easier to edit natively with in FCP.

The HPX boasts variable frame rates (only available for 720p) which can allow frame-skipping (undercranking) down to 12fps (actually down to 2fps – although this is an unsupported feature and can be kludged in the scene files); and highspeed (overcranking) to 50fps (or 60fps in 60Hz mode). The undercranking option allows for a type of 'quick motion' effect - but in the 720pN (native) mode, only real frames are actually recorded allowing recording times to be lengthened (doubled). In undercranked mode you can get twice as many frames recorded and halve your recording time – but you get good quality slow-motion effects for fast-paced action which is now fully supported in FCP.

Who's got the Look?

The HPX shoots High Definition in 16:9 and Standard Definition (DV) in either 4:3 or 16:9 formats - both look great with rich colours and nice detail. The camera does have a lot of settings that you can use to create a 'look' in-camera or to help with tricky lighting situations. There are six preset 'scene files' which can be modified and saved back / reloaded from an SD memory card. The scene files can be edited manually on a computer too.

Scene files allow you to control the camera in a variety of ways - choosing the gamma levels, detail levels and chroma settings plus colour temperature, skin tone detail, aperture angle (syncro scan or fixed rates), black level, noise reduction, adjustments to the auto iris settings and frame rate. This can be great for a multi-camera shoot where each camera can be setup exactly the same by copying the scene file from the SD card.

Making adjustments to the default scene files definitely requires delving into the manuals, which so far are not very full. It's probably best to actually download the HVX200 manual as well as the HPX500 or read some of the online user forums for tips and tricks. The default scene files do have settings suitable for shooting in a variety of conditions – with cine-like gamma settings and news gamma, plus shooting under fluorescent lighting. There is an additional Auto Knee level switch on the HPX which can help to bring back detail in heavily backlit scenes or scenes with high contrast.

The HPX500 does not have a still image capture mode – although there is a frame capture and interval capture setting plus a pre-record feature to ensure you don't miss the start of a special shot. For this, you select 'PRE_REC' and when you press the Record button, you will also have the pre-selected amount of seconds of recording prior to you pressing the record button. I can think of many situations when that would be useful. There is also a time lapse recording feature and a loop recording feature to continuously overwrite

a recording – more flexibility from the P2 media.

Built to Last?

I'm very happy with the overall build quality of the camera – it feels very solid although the camera is heavier than I thought it would be without a tape drive. I guess the weight will be dependant on the lens and battery options. I used the camera handheld for quite a bit of filming and also tripod based. The shoulder-mount seems well balanced but due to the weight it was difficult to do much in the way of steady up-down tracking shots handheld. I think I would use something like an ENG-RIG mono-pod on the front if I owned one, but I also need more practice with this size of camera so don't take some of the ergonomic 'issues' at face value.

The LCD panel is a bit small (3.5") which does seem to be the norm on bigger cameras, but then its only the menu you are likely to use this for as it's pretty useless for focusing with. It has the usual self-shoot twist and also a 'mirror' feature which will probably help the 'talent' as its just like looking in a mirror and more intuitive then a standard twist screen self-shoot on other cameras. There is a background transparency setting on the LCD to help you read the text more easily in some situations which can be very useful.

Just do it...

To summarise - I liked the HPX500. I liked the variety of shooting formats and the similarity with the HVX200 made it very easy for me to just 'point and shoot'. We had the camera for 4 or 5 days and we filmed every day and virtually every night - night shoots, low light scenes and live music - without any hitches. I got stuck a few times with the size and weight of the camera – I don't think I damaged the batteries too much when I backed into the odd wall a few times, being unfamiliar with the length (sorry Robert!).

I think anyone who is used to a standard shoulder-mount camera would certainly feel at home with the HPX500. ■

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Notes: Take a look at Raylight for MAC (www.dvfilm.com/raylight/mac/index.htm) which apparently allows for direct editing of P2 content in FCP. Thanks to Robert Holland for the loan units. More details are available from the micro website www.hpx500.eu.