



HDC User Group Newsletter No.8

*If you don't wish to receive this letter, or you know other people who might wish to receive it, please let me know: neil.thompson@eu.sony.com
Ideas or news for future editions also gratefully received.*

This issue

- HDVF-550
- Hypergamma
- Pixel correction
- Supermotion updates
- Things beginning with 3
- Matching camcorders

HDLA spotters guide:



HDLA-1500
(for HDVF-700A/9900/EL100)

HDLA-1505
(for HDVF-C950W/C730W)

HDLA-1507
(for HDVF-700A/9900/EL100)

HDVF-550

This new 5" CRT viewfinder is now available. It looks remarkably like the BVF-55, which is no surprise, as several customers have asked for an HD version of the BVF-55. It's still a 4:3 tube letterboxed to 16:9, so picture size is not huge, but there's no lag, and it mounts directly to the camera. Resolution of the tube is much the same as the BVF-55, but don't be put off by that; it looks very good in HD.

SRP is £5890



A quick summary below of the slightly bewildering choice of viewfinders:

HDVF-200	2" CRT	B&W	Lower cost, lower spec than 20A
HDVF-20A	2" CRT	B&W	Standard monocular
HDVF-C35W	3.5" LCD	Colour	Nice for drama
HDVF-C730W	6.5" LCD	Colour	Compact colour LCD
HDVF-C950W	9" LCD	Colour	Improved contrast, viewing angle
HDVF-550	5" CRT	B&W	New low cost direct mounting CRT
HDVF-700A	7" CRT	B&W	Most popular for sport. Needs cradle or special adapter to support/ power.
HDVF-700B	7" CRT	B&W	As above, but black.
HDVF-EL100	11" OLED	Colour	No lag, v. big and bright.

Hypergamma

The latest software in the HDC range gives you a wider choice of gamma curves. As well as the standard curves (ITU-709, EBU etc.) there is now a choice of four different Hypergamma curves.

When these curves are selected, the knee circuit is disabled. Curves 1 and 2 roll off gradually to 100% and curves 3 and 4, designed to go through a grading process, roll off at 109%.

They are all designed to deal with high contrast scenes, where they will capture more dynamic range than an ITU-709 curve. (An ITU-709 curve with finely tuned knee settings may however capture more range, but the sharp change in the curve at the knee point can cause problems.)

They are a bit like a low contrast film stock, in that pictures may look flat from a low contrast scene. They will help capture highlights in a high contrast scene, and will offer a colourist more room to maneuver if there will be a grading process. If you need to match cameras, make sure they are all using the same HG curve.

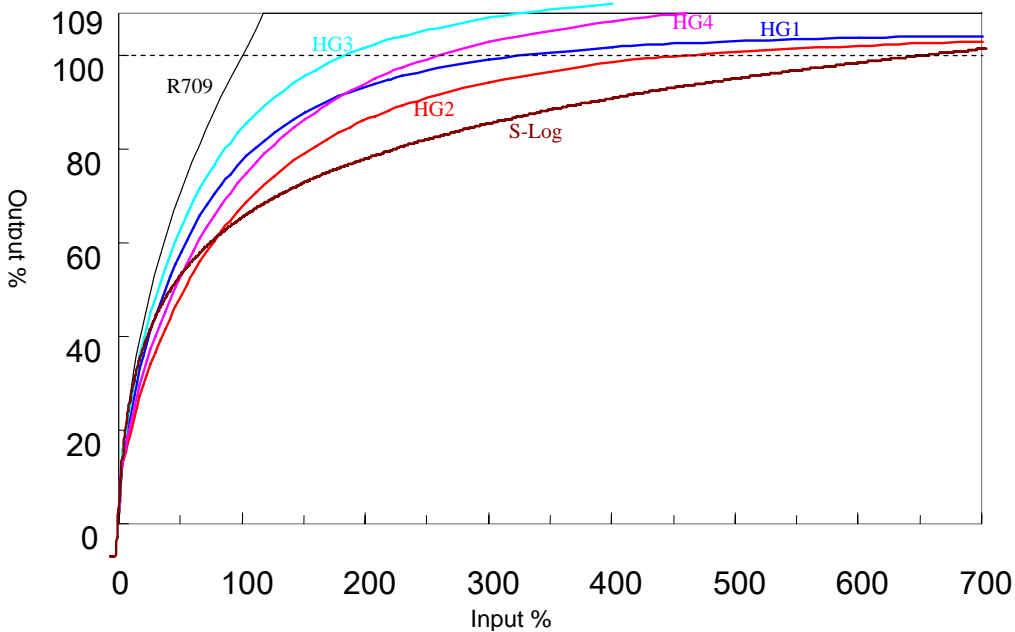
Hypergamma	Brighter mid tones	Wide dynamic range
100% clip	HG1	HG2
109% clip	HG3	HG4

Standard gamma

- | | |
|---------------------|---|
| 1. SD ENG camcorder | As used for instance in digi beta camcorders. |
| 2. 4.5-times gain | Describes the initial steepness of the gamma curve. |
| 3. 3.5-times gain | A less steep curve giving less black stretch. |
| 4. SMPTE-240M | |
| 5. ITU-R709 | Normal curve for HDTV |
| 6. 5.0-times gain | Lots of black stretch, can look noisy, but captures lots of info in low luminance areas |

Hypergamma

- | | |
|-----------------|--|
| 1. 325% to 100% | Input of 325% pre-gamma maps to 100% post gamma. |
| 2. 460% to 100% | |
| 3. 325% to 109% | Check clips are switched off if using HG3 or HG4 |
| 4. 460% to 109% | |



Pixel problems

Noisy pixels can affect any CCD sensor, but the HDC cameras incorporate a range of defence mechanisms.

The first line of defence is an automatic pixel restoration (APR) system that is activated during the auto black balance routine.

Each time you press the ABB button the APR system will scan one of the CCDs for any noisy pixels. If it sees any residual point noise (RPN) above a certain threshold, it will turn off that pixel and generate an estimated value for the missing pixel from adjacent pixels.

- Let the camera get warm before trying to fix pixel problems. Noise increases with heat, and it gives the system a bigger target to aim at.
- The APR looks at each CCD in turn every time you auto black balance, so it may need three ABB operations to get round to the CCD with a problem.
- Even then, it's worth going round the loop again in case the APR misses (for instance if a pixel is 'twinkling' and is harder to detect at a given instant).
- It may take 9 or more ABB operations, but the APR system will fix 95% of pixel errors.

If APR does not work, it can be for a number of reasons; for instance the pixel you are trying to correct may be below the threshold level. The second line of defence is manual compensation.

Just going off topic for a moment:

If during normal operation auto black balance is taking too long, try using the auto level, which does the black balance, but doesn't perform RPN correction. (RPN correction can be turned off for ABB, but may be risky if trying to perform ABB to remove pixels).

Manual compensation can be used via the camera head menu, or via the MSU. The best method is to take the camera to the workshop and use a good monitor and the camera head menu to compensate RPN. Let's assume there isn't time for that, the camera is rigged a long way away, you need a quick fix, and have access to an MSU-900 / 950:

Manual RPN correction from the MSU

Put the MSU in to engineering mode. (CONFIG / MSU / ENGINEER MODE)

- Access the maintenance menu, and select the RPN page.
- Turn on the cursors.
- Make sure you have a decent monitor available to view the cursors. Remember that many LCD monitors will scale pictures so that it will be hard to judge which pixel on the camera you are looking at. Similarly with looking at a down-converted output. An HD waveform monitor is useful at this stage.
- Select the correct colour channel for the pixel in question.
- Preferably select Progressive mode instead of Interlace.
- Turn off detail correction, as this may cause cross-talk between the colour channels.
- Position the cursors over the RPN
- If the RPN is targeted correctly, it will give you a preview of the correction, and the RPN will disappear. Do not execute the correction until you are sure you have correctly targeted the pixel. You may need to position the cursor over a box of nine or more pixels to find the correct position.

Manual RPN correction from the camera head

- Allow the camera to warm up.
- Select the correct colour channel for the pixel in question. Note that setting the RGB channel selection on the RPN correction menu does not change the channel you're monitoring, just the channel you're aiming at.
- Preferably select Progressive mode instead of Interlace.
- Turn off detail correction, as this may cause cross-talk between the colour channels.
- The RPN cursor will appear on the HDSDI output, but in order to look at a single colour channel you may need to go through an HD waveform monitor that can select RGB channel monitoring.
- Alternatively you can set the test output to look at analog R, G or B channel, though this will also have the menu characters superimposed, and your pixel may be hidden behind characters. The only output you can be sure will show the cursor but no characters is the HDSDI.
- To enter the service menu, Set the DISPLAY switch to "MENU" while pressing the
- ASSIGNABLE switch and the rotary encoder. (The assignable switch is the unlabelled one next to the CC and ND filter buttons.)
- Proceed as for the MSU mode above.
- There are now some new functions since V1.16 software, such as the

<MANUAL RPN>	S03	TOP
RPN CH SELECT	:	R
RPN CURSOR	:	OFF
CURSOR H POS.	:	1008
CURSOR V POS.	:	576
CURSOR JUMP	:	CURR
RPN WIDTH	:	1
RECORD RPN	:	EXEC
DELETE RPN	:	EXEC

ability to jump the cursor to the next recorded RPN position. See section 3-10 of the manual. This is a useful way to find any recorded RPNs that may have missed the target, and cancel them. It is important to cancel any corrections that went wide of the mark, as you can't enter two corrections in close proximity to each other.

We offer a range of support plans which cover the CCD blocks for 3 or 5 years giving customers peace of mind and therefore avoiding unexpected high repair costs outside the normal warranty period. If you have any questions or would like further information please contact Kate Bosworth.

Supermotion Update

There is an important software update available for the HDC-3300 Supermotion systems. We would also like to add a small hardware mod to the camera systems that has been recommended by the factory as a part of this software upgrade.

The improved features include those recently added to the HDC 1xxx series cameras: support of Memory Stick Pro, additional noise suppression, Hyper Gamma, VF Detail Frequency, Standard Gamma no 7, Expansion of Master Gain to +36db, 720P improvements, Skin Tone Improvements, Ethernet Noise improvement and SD Matrix improvements.

The HDC & HDCU software is now V1.22.

If you can arrange to deliver us your HDC-3300s and HDCU-3300s we will get them fully up to date ready for the summer at our minimum job charge of £170 per system.

We'd really like to make sure all customers take advantage of this upgrade at a similar time in order to maintain compatibility and simplify problem solving. Updates will be FOC for holders of service contracts.

Please contact the Sony Support Helpdesk on 01256-683838 if you would like to arrange the return of your units.

Things beginning with 3 3D

3D seems to be going through a fashionable phase at the moment. Although most of your current HD equipment can be used in a 3D environment, if you are doing a 3D test please let us know if you have particular product requests. We'd like to make sure the design team is aware of what you might need for 3D.

Don't forget there are T-series remote head block options for HDC-950, HDC-1500 series and Supermotion cameras that may come in handy for a 3D rig.

3G

For some time broadcasters have been aiming towards a 1080P / 50 frame rate, that will put an end to interlaced pictures. This means increasing the data rate of an HDSDI signal to about 3Gbps. Until recently this has meant a 'dual link' cable connection, as the data rate is too high to squeeze through a single BNC. The 3G standard (SMPTE 424M) uses faster ICs to allow a single cable to carry this 3Gbps signal.

It's all very well finding a way to get 1080P / 50 down one wire, but you also need a camera that will generate 50P images, and get them back to the truck / CTA. Step forward HDC-1500 and HDC-1000. The CCD block in these cameras has always been able to work at 50P and output via dual link on the back of the camera. Current fibre transmission and HDCUs are not able to deal with this amount of data though. The good news is that all HDC-1500/1000 and HDCU-1500/1000s can be upgraded to handle this data rate, via existing fibre, and output via a 3G connection on the back of the HDCU. Availability and price for the upgrade is yet to be confirmed. Unfortunately there's no way triax can handle 3G.

Matching HD camcorders with HDCs.

Two recent additions to the Sony camcorder line-up have taken advantage of the sensors and processing used in the HDC-1500. The HDW-650 is an HDCAM camcorder and the PDW-700 is an XDCAM HD 422 camcorder recording to professional optical disk. If you need to integrate camcorders into a production with HDC cameras, these two should give you a head start. As well as the sensors and processing, the menu structure is very similar, and both have the standard 8 pin remote connector if you do need to attach an RCP or MSU directly to them.

Contacts

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