

# Colorimetric and Resolution requirements of cameras

Alan Roberts

## **ADDENDUM 16 rev1: Menu settings for**

### **Sony PDW530P XDCAM**

**This document is a report of the results of tests that are the precursor of those described in the EBU technical document Tech3335. It is not an endorsement of the product.**

A brief assessment was made on a production sample of the PDW530P (no 40099), a 625-line SDTV XDCAM cam-corder. It is very similar in form and function to other small camcorders, sharing many features and having a very similar menu set. For this assessment, no manual was available.

The camera is switchable between interlace (50i) and progressive (25psf) modes and thus can generate a “film look” in the camera. It has specific “film-look” gamma curves that incorporate many of the contrast handling features of earlier cameras, making it a great deal easier to set up. The camera has 3 2/3” ccds and records to a 23GB DVD rather than tape, using IMX data compression. It also records using the standard DV coder, called DVCAM in this model.

The camera is significantly smaller and lighter than the familiar Beta camcorder and is useful mostly for portable, single-camera work. It has many internal menus for setting the performance, such that it can then be used without external controls. It is not well suited to multi-camera operation, its only video output is via composite PAL or an encoded DV signal (IEEE1394, iLink).

Revision 1 corrects a typing mistake.

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Many menu items have little or no effect on the image. Those that do so are highlighted. The full menus are given for completeness. Where two values are given {f} denotes film use (25psf), {v} video (50i). The film mode does not use any of the "Film" gamma curves, because they are clearly designed to achieve a "finished" look, with oversaturated colours and crushed shadows. However, since all the Film curves incorporate a knee with gentle inflexion, they may be more appropriate in some circumstances. The Film gamma curves are all very similar to each other, there seems little merit in choosing any one over the others. The manual knee and black stretch controls both operate on the Film gammas as well as the Standard ones, care is needed to avoid over compression of highlights. Both gamma modes can cope with about 2 stops of overexposure. With Black Stretch and Knee both off, the camera can capture nearly 10 stops of exposure range, apparently a little better than the Digibeta 790 (maybe the test lens produced less flare). In the "video" mode with optimised Black Stretch and Knee, it captures 11.5 stops (about 2 stops of overload, and 0.5 stop of underexposure), to mimic film performance. This is a bigger range than any of the "FLM" gammas can do, because the FLM gammas all have low slope near black, presumably intended to make oversaturated, black-crushed pictures.

Detail enhancement has been set low, because there is a strange diagonal filtering that causes significant and visible aliasing at even moderate levels. Detail is inevitably switched off for the film mode.

FreezeMix mode appears to be the equivalent of EVS in other cameras. Switched on in 25psf mode gives the same vertical resolution as 50i, thus minimising most interlace twitter artefacts.

The camera has five User switches, three on the left side (one labelled "Turbo Gain") and two on the top handle. It also has a small flip-out lcd panel, extremely useful for setting up menus. It is a pity that the only video outputs from the camera are composite coded PAL or RGB components one at a time, there is no digital output except via an IEEE1394 connector, DV encoded.

In usual Sony style, controls tend to have a large range, with a zero setting that may or may not be centred. Zero does not often mean no action, it is merely the factory default setting. Since the test camera had been used by others, there is no guarantee that defaults switch settings in these tables are accurate, they are only what was found in the test camera at the time of testing.

There is a strange effect, shown using the sawtooth test signal with gamma switched off; at about 82% signal level, the slope changes slightly, indicating a pre-knee after the sawtooth injection point. The same inflection shows at higher gains, where it is more obvious. I have no explanation for this yet, but it has no significant effect in pictures. Standard gamma curve #4 is the closest match to BBC curves, nominally the 0.4 version, but with maximum slope only 4.35; in the Film setup, Black Stretch raises the slope to about 5.7.

### USER MENUS

22 pages of menus that can be customised by selecting pages from the rest of the menu structure

### OPERATION MENUS

#### 1 OUTPUT

| <i>Item</i>    | <i>Range</i> | <i>Factory</i> | <i>description</i>    | <i>BBC</i> |
|----------------|--------------|----------------|-----------------------|------------|
| LCD bright <L> | -32~31       | 0              | side panel brightness |            |
| LCD bright <H> | -32~31       | 0              | what?                 |            |
| LCD color      | -32~31       | 0              | red to blue           |            |

#### 2 TEST OUT

controls test output socket

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-------------|--------------|----------------|--------------------|------------|
|-------------|--------------|----------------|--------------------|------------|

|                 |         |     |             |
|-----------------|---------|-----|-------------|
| Test Out Marker | On, Off | Off | v/f markers |
| Test Out VFdisp | On, Off | Off | displays    |
| Test Out Menu   | On, Off | Off |             |
| Test Out Zebra  | On, Off | Off |             |
| Test Out TC     | On, Off | Off |             |
| Test Out Select | On, Off | Off |             |

**3 FUNCTION 1**

assignables

| <i>Item</i>   | <i>Range</i>  | <i>Factory</i> | <i>description</i>     | <i>BBC</i> |
|---------------|---|----------------|------------------------|------------|
| Assign SW <1> | Off, Test out character, Marker, ATW, Return video, Lens ret, Rec switch, Turbo switch, Zebra, Freeze mix | ATW            | ATW=auto white         |            |
| Assign SW <2> | Off, Test out character, Marker, Rec video source, Zebra, Freeze mix, D5600, Ext rec control              | Off            |                        |            |
| Assign SW <3> | Off, Test out character, Marker, ATW, Return video, Lens ret, Rec switch, Turbo switch, Zebra,            | Off            | Switches on top handle |            |
| Assign SW <4> | Zoom tele/wide  | Off            |                        |            |
| Turbo SW      | Off, Test out character, Marker, ATW, Return video, Lens ret, Rec switch, Turbo switch, Zebra, Freeze mix | Turbo          |                        |            |

**4 FUNCTION 2**

| <i>Item</i>      | <i>Range</i>  | <i>Factory</i> | <i>description</i>          | <i>BBC</i> |
|------------------|---------------|----------------|-----------------------------|------------|
| D5600            | On, Off       | Off            | shifts 3200 balance to 5600 |            |
| Wide AWB         | On, Off       | On             | if off, enables D5600       |            |
| White switch <B> | Mem, ATW      | Mem            | preset white                |            |
| Shockless white  | Off, 1, 2, 3  | 1              | auto-white drift speed      |            |
| ATW speed        | 1, 2, 3, 4, 5 | 4              |                             |            |
| Zoom speed       | --            |                |                             |            |
| Low light        | On, Off       | Off            | vf warning                  |            |
| Low light level  | -32~167       | 0              | uncalibrated                |            |
| VF batt warning  | 10%, 20%      | 10%            |                             |            |

**5 POWER SAVE**

| <i>Item</i>   | <i>Range</i>  | <i>Factory</i> | <i>description</i>                    | <i>BBC</i> |
|---------------|---------------|----------------|---------------------------------------|------------|
| i.Link out    | Enable, Dsabl | Dsabl          |                                       |            |
| Rec audio out | EE, Save      | EE             |                                       |            |
| Network       | Enable, Dsabl | Dsabl          | Ethernet connector on handle, "Dsabl" |            |
| Thumbnail     | VDRSW, Save   |                | enables thumbnails                    |            |

**6 VF DISP 1**

| <i>Item</i>   | <i>Range</i> | <i>Factory</i> | <i>description</i>          | <i>BBC</i> |
|---------------|--------------|----------------|-----------------------------|------------|
| VF disp       | On, Off      | On             | All v/f displays            |            |
| VF disp mode  | 1, 2, 3      | 3              | Couldn't see what this does |            |
| Disp extender | On, Off      | Off            | Lens extender               |            |
| Disp filter   | On, Off      | Off            | etc                         |            |
| Disp white    | On, Off      | Off            |                             |            |
| Disp Gain     | On, Off      | Off            |                             |            |
| Disp Shutter  | On, Off      | Off            |                             |            |
| Disp audio    | On, Off      | Off            |                             |            |
| Disp disc     | On, Off      | Off            |                             |            |
| Disp iris     | On, Off      | Off            |                             |            |

**7 VF DISP 2**

| <i>Item</i>      | <i>Range</i>    | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|-----------------|----------------|--------------------|------------|
| Disp zoom        | On, Off         | Off            |                    |            |
| Disp color temp  | On, Off         | Off            |                    |            |
| Disp batt remain | Int, Volt, Auto | Int            |                    |            |
| Disp disc in     | On, Off         | Off            |                    |            |
| Disp 16:9/4:3 ID | On, Off         | On             |                    |            |
| Disp WRR RF lvl  | On, Off         | Off            | Radio mic rf level |            |
| Disp time code   | On, Off         | On             |                    |            |
| Disp rec format  | On, Off         | On             |                    |            |

**8 ! LED**

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-------------|--------------|----------------|--------------------|------------|
| Gain <1>    | On, Off      | On             |                    |            |

|            |         |    |                  |
|------------|---------|----|------------------|
| Shutter    | On, Off | On |                  |
| Wht preset | On, Off | On |                  |
| ATW run    | On, Off | On |                  |
| Extender   | On, Off | On |                  |
| Filter     | On, Off | On |                  |
| Override   | On, Off | On | Not sure of this |

**9 MARKER 1**

| <i>Item</i>       | <i>Range</i>       | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-------------------|--------------------|----------------|--------------------|------------|
| Marker            | On, Off            | On             |                    |            |
| Center            | On, Off            | On             |                    |            |
| Safety zone       | On, Off            | Off            |                    |            |
| Safety area       | 80%, 90%, 92%, 95% | 90%            |                    |            |
| Aspect            | On, Off            | Off            |                    |            |
| Aspect select     | 3:3, 13:9, 14:9    | 14:9           |                    |            |
| Aspect mask (4:3) | On, Off            | Off            |                    |            |
| Aspect mask lvl   | 1/8, 1/4, 1/2      | 1/4            |                    |            |
| 100% Marker       | On, Off            | Off            |                    |            |

**10 MARKER 2**

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i>                            | <i>BBC</i> |
|-----------------|--------------|----------------|---|------------|
| User box        | On, Off      | Off            |   |            |
| User box width  | 1~465        | 245            | Pixel numbers/2                               |            |
| User box height | 1~142        | 72             | Line numbers/4                                |            |
| User box H pos  | -461~461     | 0              | Positions limit when box hits an edge,        |            |
| User box V pos  | -141~140     | 0              | offset from centre restricts height and width |            |
| Centre H pos    | -48~47       | 0              |   |            |
| Centre V pos    | -15~14       | 0              |   |            |

**11 GAIN SW**

| <i>Item</i>  | <i>Range</i>        | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|--------------|---------------------|----------------|--------------------|------------|
| Gain low     | -3, 0, 3, 6, 9, 12, | 0              |                    | 0 dB       |
| Gain mid     | 18, 24, 30, 36, 42, | 9              |                    | 9 dB       |
| Gain high    | 48dB                | 18             |                    | 18 dB      |
| Gain turbo   |                     | 42             |                    |            |
| Turbo SW Ind |                     | Off            |                    |            |

**12 VF SETTING**

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------|----------------|--------------------|------------|
| Zebra           | On, Off      | On             |                    | On         |
| Zebra select    | 1, 2, Both   | 1              |                    | 1          |
| Zebra 1 det lvl | 20~107%      | 85%            |                    | 85%        |
| Zebra 1 apt lvl | 1~20%        | 10%            |                    | 10%        |
| Zebra 2 det lvl | 52~109%      | 100%           |                    |            |
| VF detail level | 4~195        | 0              |                    |            |
| VF aspect       | Auto, 16:9   | Auto           |                    | Auto       |

**13 AUTO IRIS**

| <i>Item</i>     | <i>Range</i>          | <i>Factory</i> | <i>description</i>           | <i>BBC</i> |
|-----------------|-----------------------|----------------|------------------------------|------------|
| Iris override   | On, Off               | Off            |                              |            |
| Iris speed      | -99~99                | 0              |                              |            |
| Clip high light | On, Off               | Off            |                              |            |
| Iris window     | 1, 2, 3, 4, 5, 6, Var | 1              | Various shapes               |            |
| Iris window Ind | On, Off               | Off            |                              |            |
| Iris var width  | 1~465                 | 245            | Same rules as for marker box |            |
| Iris var height | 1~142                 | 85             |                              |            |
| Iris var H pos  | -461~461              | 0              |                              |            |
| Iris var V pos  | -140~140              | 0              |                              |            |

**14 SHOT ID**

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i>                           | <i>BBC</i> |
|-------------|--------------|----------------|--|------------|
| ID-1        |              |                |  |            |
| ID-2        |              |                | Four lines of text, 12 characters each, used |            |
| ID-3        |              |                | in shot id selection, see below              |            |
| ID-4        |              |                |  |            |

**15 SHOT DISP**

| <i>Item</i>     | <i>Range</i>           | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|------------------------|----------------|--------------------|------------|
| Shot date       | On, Off                | On             |                    |            |
| Shot time       | On, Off                | On             |                    |            |
| Shot model name | On, Off                | Off            |                    |            |
| Shot serial no  | On, Off                | Off            |                    |            |
| Shot ID sel     | ID-1, ID-2, ID-3, ID-4 | ID-1           |                    |            |
| Shot 16:9 ID    | On, Off                | Off            |                    |            |
| Shot blink char | On, Off                | Off            |                    |            |

**16 SET STATUS**

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------|----------------|--------------------|------------|
| Status abnormal | On, Off      | On             |                    |            |
| Status function | On, Off      | On             |                    |            |
| Status audio    | On, Off      | On             |                    |            |

**17 OFFSET WHT**

Preset white balance switch values

| <i>Item</i>      | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|--------------|----------------|--------------------|------------|
| Offset white <A> | On, Off      | Off            |                    |            |
| Warm-cool <A>    | 2358~65535   | 6300           | Kelvins, big steps |            |
| Color fine <A>   | -99~99       | 0              | Fine steps         |            |
| Offset white <B> | On, Off      | Off            |                    |            |
| Warm-cool <B>    | 2358~65535   | 6300           | Kelvins, big steps |            |
| Color fine <B>   | -99~99       | 0              | Fine steps         |            |

**18 SHT ENABLE**

Enable shutter speeds

| <i>Item</i>    | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|----------------|--------------|----------------|--------------------|------------|
| Shutter SLS    | On, Off      | On             | Slow shutter       |            |
| Shutter ECS    | On, Off      | On             |                    |            |
| Shutter 1/60   | On, Off      | On             |                    |            |
| Shutter 1/125  | On, Off      | On             |                    |            |
| Shutter 1/250  | On, Off      | On             |                    |            |
| Shutter 1/500  | On, Off      | On             |                    |            |
| Shutter 1/1000 | On, Off      | On             |                    |            |
| Shutter 1/2000 | On, Off      | On             |                    |            |

**19 LENS FILE**

| <i>Item</i>      | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|--------------|----------------|--------------------|------------|
| Lens file select | 1~16         | 1              |                    |            |
| F.ID             | (report id)  |                |                    |            |

**20 FORMAT**

Important stuff

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i>   |
|-----------------|--------------|----------------|--------------------|--------------|
| 16:9/4:3 select | 16:9, 4:3    | 16:9           |                    |              |
| Scan mode       | I, PsF       | I              |                    | I{v}, PsF{f} |

**21 SOURCE SEL**

| <i>Item</i>      | <i>Range</i> | <i>Factory</i> | <i>description</i>               | <i>BBC</i> |
|------------------|--------------|----------------|----------------------------------|------------|
| Rec video source | Cam, Ext     | Cam            | Presumably, ext means via i.Link | Cam        |
| Ext rec control  | On, Off      | Off            |                                  |            |

**22 UMID SET**

| <i>Item</i>  | <i>Range</i> | <i>Factory</i> | <i>description</i>             | <i>BBC</i> |
|--------------|--------------|----------------|--------------------------------|------------|
| Country code |              |                | 4 characters                   |            |
| Organization |              |                | 4 characters                   |            |
| User code    |              |                | 4 characters                   |            |
| Time zone    |              |                | Choose from list of time zones |            |

**PAINT****1 SW STATUS**

Main switches

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i>    |
|-------------|--------------|----------------|--------------------|---------------|
| Gamma       | On, Off      | On             |                    | On            |
| Chroma      | On, Off      | On             |                    | On            |
| Matrix      | On, Off      | On             |                    | On            |
| Knee        | On, Off      | On             |                    | Off{v}, On{f} |
| White clip  | On, Off      | On             |                    | On{v}, Off{f} |
| Detail      | On, Off      | Off            |                    | On{v}, Off{f} |

|          |               |     |     |
|----------|---------------|-----|-----|
| Aperture | On, Off       | On  | On  |
| Flare    | On, Off       | Off | Off |
| EVS      | On, Off       | Off | Off |
| Test saw | Saw, Rec, Off | Off | Off |

**2 WHITE**

## White balance settings

| Item           | Range      | Factory | description                         | BBC |
|----------------|------------|---------|-------------------------------------|-----|
| Color temp <A> | 2358~65535 | 3100    | Result of white balance in Preset A |     |
| Color fine <A> | -99~99     | 0       | Fine control                        |     |
| R gain <A>     | -99~99     | 0       |                                     |     |
| B gain <A>     | -99~99     | 0       |                                     |     |
| D5600K <A>     | On, Off    | Off     |                                     |     |
| Color temp <B> | 2358~65535 | 3100    | Result of white balance in Preset B |     |
| Color fine <B> | -99~99     | 0       |                                     |     |
| R gain <B>     | -99~99     | 0       |                                     |     |
| B gain <B>     | -99~99     | 0       |                                     |     |
| D5600K <B>     | On, Off    | Off     |                                     |     |

**3 BLACK/FLARE**

| Item            | Range        | Factory | description | BBC |
|-----------------|--------------|---------|-------------|-----|
| Master black    | -107~92      | 0       |             |     |
| R black         | -99~99       | 0       |             |     |
| B black         | -99~99       | 0       |             |     |
| Master flare    | -99~99       | 0       |             |     |
| R flare         | -99~99       | 0       |             |     |
| G flare         | -99~99       | 0       |             |     |
| B flare         | -99~99       | 0       |             |     |
| Flare           | On, Off      | On      |             | On  |
| Test out select | Enc, R, G, B | Enc     |             | Enc |

**4 GAMMA**

| Item            | Range            | Factory | description  | BBC  |
|-----------------|------------------|---------|--|------|
| Gamma           | On, Off          | On      |  | On   |
| Step gamma      | 0.35~0.95        | 0.45    | 0.05 steps   | 0.45 |
| Master gamma    | -99~99           | 0       |  | 0    |
| R gamma         | -99~99           | 0       |  | 0    |
| G gamma         | -99~99           | 0       |  | 0    |
| B gamma         | -99~99           | 0       |  | 0    |
| Test out select | Enc, R, G, B     | Enc     |  | Enc  |
| Gamma select    | STD, FLM         | STD     |  | STD  |
| GMA sel (STD)   | 1, 2, 3, 4, 5, 6 | 3       | 1,2=ENG (3.5x), 3,4=BBC (4.35x), 5,6=low contrast (2.75x)  | 4    |
| GMA sel (FLM)   | 1, 2, 3, 4, 5    | 1       | All have slope about 3.1x, and built-in knee to about 600% |      |

**5 BLACK GAMMA**

| Item              | Range                   | Factory | description  | BBC           |
|-------------------|-------------------------|---------|--|---------------|
| Black gamma       | On, Off                 | Off     | Optional, adds ~1 stop to exposure range   | Off{v}, On{f} |
| Black gamma range | Low, L.Mid, H.Mid, High | H.Mid   |  | H.Mid         |
| Master blk gamma  | -99~99                  | 0       | 0=no effect, i.e. stretch or compress blacks, +62 lifts gamma STD4 black slope to 5.75 | 62            |
| R blk gamma       | -99~99                  | 0       |  |               |
| G blk gamma       | -99~99                  | 0       |  |               |
| B blk gamma       | -99~99                  | 0       |  |               |
| Test out select   | Enc, R, G, B            | Enc     |  | Enc           |

**6 KNEE**

| Item             | Range       | Factory | description   | BBC           |
|------------------|-------------|---------|---|---------------|
| Knee             | On, Off     | On      |   | Off{v}, On{f} |
| Knee point       | 50.0~109.0% | 85%     | Optional, gives about 2.5 stops overexposure, if clipper off, 1.5 if on | 85%           |
| Knee slope       | -99~99      | 0       |   | 62            |
| Knee saturation  | On, Off     | On      | Works well, preserves colours   | On            |
| Knee sat level   | -99~99      | 0       |   | 0             |
| White clip       | On, Off     | On      | Film gamma curve limits early enough                                    | On{v}, Off{f} |
| White clip level | 100.0~100.5 | 100.0   |   | 100.0         |

**7 DETAIL 1**

| <i>Item</i>      | <i>Range</i> | <i>Factory</i> | <i>description</i>                         | <i>BBC</i>    |
|------------------|--------------|----------------|--|---------------|
| Detail           | On, Off      | On             |  | On{v}, Off{f} |
| Aperture         | On, Off      | On             |  | On            |
| Detail level     | -85~114      | 0              | Strange diagonal effects at all amplitudes | -20           |
| Aperture level   | -74~124      | 0              | Works better than detail                   | 49            |
| DTL H/V ratio    | -101~98      | 0              |  | 0             |
| Crispening       | On, Off      | On             |  | -60           |
| Level depend     | On, Off      | On             |  | On            |
| LVL depend level | -16~183      | 0              |  | 0             |
| Detail freq      | -99~99       | 0              |  | 99            |

## 8 DETAIL 2

| <i>Item</i>       | <i>Range</i> | <i>Factory</i> | <i>description</i>                          | <i>BBC</i> |
|-------------------|--------------|----------------|---|------------|
| Knee aperture     | On, Off      | Off            | Might be worth having On if knee is useful, | Off        |
| Knee aperture lvl | -85~114      | 0              | but is probably insignificant               | 0          |
| Detail comb       | -99~99       | 0              |   | 0          |
| Cross color       | On, Off      | Off            | In component digits?                        | Off        |
| Cors color lvl    | -43~56       | 0              |   | 0          |
| Detail limit      | -99~99       | 0              |   | 0          |
| Dtl wht limit     | -99~99       | 0              |   | 0          |
| Dtl blk limit     | -99~99       | 0              |   | 0          |
| Dtl v-blk lmt     | -99~99       | 0              |   | 0          |

## 9 DETAIL 3

| <i>Item</i>      | <i>Range</i>   | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|----------------|----------------|--------------------|------------|
| Fine dtl         | On, Off        | Off            |                    | Off        |
| Fine dtl lvl     | -99~99         | 0              |                    | 0          |
| V dtl creation   | Nam, G, R+G, Y | R+G            |                    | R+G        |
| H/V control mode | H/V, V         | V              |                    | V          |

## 10 SKIN DETAIL

| <i>Item</i>       | <i>Range</i> | <i>Factory</i> | <i>description</i>         | <i>BBC</i> |
|-------------------|--------------|----------------|----------------------------|------------|
| Skin detail all   | On, Off      | Off            |                            | Off        |
| Skin detect       | Exec         |                | This is a command to do it |            |
| Skin area ind     | On, Off      | Off            |                            |            |
| Skin dtl select   | 1, 2, 3      |                |                            |            |
| Skin detail       | On, Off      | Off            |                            |            |
| Skin detail lvl   | -99~99       | 0              |                            |            |
| Skin detail sat   | -99~99       | 0              |                            |            |
| Skin detail hue   | -99~99       | 0              |                            |            |
| Skin detail width | -99~99       | 0              |                            |            |

## 11 MTX LINEAR

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i>                         | <i>BBC</i> |
|-----------------|--------------|----------------|--|------------|
| Matrix          | On, Off      | On             |  | On         |
| Matrix (USER)   | On, Off      | Off            | Only one preset matrix (EBU), and it can't | Off        |
| Matrix (Preset) | On           | On             | be switched off to allow only user matrix  | On         |
| Matrix R-G      | -99~99       | 0              |  |            |
| Matrix R-B      | -99~99       | 0              |  |            |
| Matrix G-R      | -99~99       | 0              |  |            |
| Matrix G-B      | -99~99       | 0              |  |            |
| Matrix B-G      | -99~99       | 0              |  |            |
| Matrix B-G      | -99~99       | 0              |  |            |

## 12 MTX MULTI

| <i>Item</i>      | <i>Range</i>  | <i>Factory</i> | <i>description</i>         | <i>BBC</i> |
|------------------|---|----------------|----------------------------|------------|
| Matrix           | On, Off   | On             |                            | On         |
| Matrix (Multi)   | On, Off   | Off            |                            | Off        |
| Matrix area ind  | On, Off   | Off            |                            |            |
| Matric color det | Exec  |                | This is a command to do it |            |
| MTX (Multi) axis | B, B+, MG-, MG, MG+, R, R+, YL-,<br>YL, YL+, G-, G, G+, CY, CY+, B- |                |                            |            |
| MTX (Multi) hue  | -99~99  | 0              |                            |            |
| MTX (Multi) sat  | -99~99  | 0              |                            |            |

## 13 MODULATION

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------|----------------|--------------------|------------|
| Vmod            | On, Off      | On             |                    |            |
| Master Vmod     | -99~99       | 0              |                    |            |
| R Vmod          | -99~99       | 0              |                    |            |
| G Vmod          | -99~99       | 0              |                    |            |
| B Vmod          | -99~99       | 0              |                    |            |
| Test out select | Enc, R, G, B | Enc            |                    |            |

**14 LOW KEY SAT**

| <i>Item</i>     | <i>Range</i>            | <i>Factory</i> | <i>description</i>                       | <i>BBC</i> |
|-----------------|-------------------------|----------------|--|------------|
| Low key sat     | On, Off                 | Off            |  | Off        |
| L.Key sat level | -99~00                  | 0              |  |            |
| L.Key range     | -99~00                  | 0              |  |            |
| Y Blk gamma     | On, Off                 | Off            | Black stretch on coded Y rather than RGB | Off        |
| Y Blk gam level | -99~00                  | 0              |  |            |
| Y blk gam range | Low, L.Mid, H.Mid, High | High           |  |            |

**15 SCENE FILE**

| <i>Item</i>  | <i>Range</i> | <i>Factory</i> | <i>description</i>                     | <i>BBC</i> |
|--------------|--------------|----------------|--|------------|
| 1            | (name)       |                | These are reports of stored file names |            |
| 2            | (name)       |                |  |            |
| 3            | (name)       |                |  |            |
| 4            | (name)       |                |  |            |
| 5            | (name)       |                |  |            |
| Standard     |              |                |  |            |
| Scene recall | Exec         |                | This is the command to do it           |            |
| Scene store  | Exec         |                |  |            |
| F.ID         | (name)       |                |  |            |

**MAINTENANCE****1 WHITE SHADING**

| <i>Item</i>     | <i>Range</i>  | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|---------------|----------------|--------------------|------------|
| Wht shad ch sel | R, G, B, Test |                |                    |            |
| Test out select | Enc, R, G, B  | Enc            |                    |            |
| Wht H saw       | -99~99        | 0              |                    |            |
| Wht H para      | -99~99        | 0              |                    |            |
| Wht V saw       | -99~99        | 0              |                    |            |
| Wht V para      | -99~99        | 0              |                    |            |
| White saw/para  | On, Off       | On             |                    | On         |

**2 BLACK SHADING**

| <i>Item</i>      | <i>Range</i>  | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|---------------|----------------|--------------------|------------|
| Blk shad ch sel  | R, G, B, Test |                |                    |            |
| Test out select  | Enc, R, G, B  | Enc            |                    |            |
| Blk H saw        | -99~99        | 0              |                    |            |
| Blk H para       | -99~99        | 0              |                    |            |
| Blk V saw        | -99~99        | 0              |                    |            |
| Blk V para       | -99~99        | 0              |                    |            |
| Black saw/para   | On, Off       | On             |                    | On         |
| Master black     | -107~92       | 0              |                    |            |
| Master gain(tmp) | -3~48dB       | 0              |                    |            |

**3 LEVEL ADJ**

| <i>Item</i>      | <i>Range</i> | <i>Factory</i> | <i>description</i>            | <i>BBC</i> |
|------------------|--------------|----------------|-------------------------------|------------|
| Enc video level  | -99~99       | 0              | Doesn't affect recorded level |            |
| RGB level        | -99~99       | 0              |                               |            |
| Test out select  | Enc, R, G, B | Enc            |                               |            |
| H blanking width | -99~99       | 0              |                               |            |

**4 BATTERY**

| <i>Item</i>  | <i>Range</i> | <i>Factory</i> | <i>description</i>       | <i>BBC</i> |
|--------------|--------------|----------------|--------------------------|------------|
| <Sony info>  |              |                | Lithium battery settings |            |
| Before end 1 | 5~100%       | 10%            | 5% steps                 |            |
| End 1        | 0~5%         | 5%             |                          |            |
| <Sony>       |              |                |                          |            |
| Before end 2 | 11.5~17.0V   | 11.6V          |                          |            |



|              |            |       |  |
|--------------|------------|-------|--|
| End 2        | 11.0~11.5V | 11.0V |  |
| <Sony info>  |            |       |  |
| Before end 3 | 11.5~17.0V | 11.5V |  |
| End 3        | 11.0~11.5V | 11.0V |  |

**5 AUDIO-1**

| <i>Item</i>      | <i>Range</i>    | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|-----------------|----------------|--------------------|------------|
| CA-701 audio in  | Enabl, Dsabl    | Enabl          |                    |            |
| Audio CH3/4 mode | CH1/2, SW       | SW             |                    |            |
| Rear XLR auto    | On, Off         | On             |                    |            |
| Front mic ref    | -60, -50, -40dB | -60dB          |                    |            |
| Rear mic ref     | -60, -50, -40dB | -60dB          |                    |            |
| Min alarm vol    | Set, Off        | Off            |                    |            |
| SP att level     | Off, 3, 6, 9dB  | Off            | Speaker level      |            |
| Headphone out    | Mono, Streo     | Mono           |                    |            |

**6 AUDIO-2**

| <i>Item</i>       | <i>Range</i>           | <i>Factory</i> | <i>description</i>                 | <i>BBC</i> |
|-------------------|------------------------|----------------|------------------------------------|------------|
| Au data len(IMX)  | 16,24bit               | 16bit          | Audio word length                  |            |
| Au ref level      | -20, -18, -16, -12dB   | -20dB          |                                    |            |
| Au CH1/2 agc mode | Mono, Streo            | Mono           |                                    |            |
| Au CH3/4 agc mode | Mono, Streo            | Mono           |                                    |            |
| Au agc spec       | -6, -9, -12, -15dB     | -6dB           |                                    |            |
| Au limiter mode   | Off, 06, -9, -12, 15dB | Off            |                                    |            |
| Au out limiter    | On, Off                | Off            |                                    |            |
| i.Link audio out  | 2ch, 4ch               | 2ch            | 4ch=12-bit 32kHz, 2ch=16-bit 48kHz |            |

**7 AUDIO-3**

| <i>Item</i>     | <i>Range</i>       | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------------|----------------|--------------------|------------|
| Au SG(1kHz)     | On, Off, Auto      | Auto           | Tone               |            |
| Mic CH1 level   | Side1, Front, F+S1 | F+S1           |                    |            |
| Mic CH2 level   | Side2, Front, F+S2 | F+S2           |                    |            |
| Rear1/WRR level | Side1, Front, F+S1 | F+S1           |                    |            |
| Rear2/WRR level | Side2, Front, F+S2 | F+S2           |                    |            |

**8 TIMECODE**

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------|----------------|--------------------|------------|
| TC out          | Auto, Gene   | Auto           |                    |            |
| Ext-LK Ubit     | Int, Ext     | Int            |                    |            |
| LTC Ubit        | Fix, Time    | Fix            |                    |            |
| VITC Ubit       | Fix, Time    | Fix            |                    |            |
| Watch auto adj  | On, Off      | On             |                    |            |
| Ubit group ID   | 000, 101     | 000            |                    |            |
| VITC ins line 1 | 9~22H        | 19H            |                    |            |
| VITC ins line 2 | 9~22H        | 21H            |                    |            |

**9 VDR MODE**

Disc recorder

| <i>Item</i>      | <i>Range</i>               | <i>Factory</i> | <i>description</i>              | <i>BBC</i> |
|------------------|----------------------------|----------------|---------------------------------|------------|
| Rec ,tally blink | On, Off                    | On             |                                 |            |
| Rec start beep   | On, Off                    | Off            |                                 |            |
| Sub lcd mode sel | Timer, Off, Cont           | Timer          |                                 |            |
| Sub lcd timer    | 1, 3, 8H                   | 1H             |                                 |            |
| Rec format       | IMX50, IMX40, IMX30, DVCAM | IMX50          | 50Mb/s for best picture quality | IMX50      |

**10 PRESET WHT**

| <i>Item</i>    | <i>Range</i> | <i>Factory</i> | <i>description</i>                        | <i>BBC</i> |
|----------------|--------------|----------------|---|------------|
| Color temp <P> | 2358~65535   | 3100           | Result of white balance in main Preset    |            |
| Color fine <P> | -99~99       | 0              | Fine control                              |            |
| R gain <P>     | -99~99       | 0              |   |            |
| B gain <P>     | -99~99       | 0              |   |            |
| D5600K <P>     | On, Off      | Off            |   |            |
| AWB enable     | On, Off      | Off            | So you can set the preset to auto as well |            |

**11 DCC ADJUST**

Auto knee

| <i>Item</i>      | <i>Range</i>             | <i>Factory</i> | <i>description</i>                       | <i>BBC</i> |
|------------------|--------------------------|----------------|--|------------|
| DCC function sel | DCC, ADP.K, Fix DCC      | DCC            |  |            |
| DCC range        | 400, 450, 500, 550, 600% | 600%           | Implies the ccds do 600% overload, maybe |            |
| DCC point        | -99~99                   | 0              |  |            |
| DCC gain         | -99~99                   | 0              |  |            |
| DCCdelay time    | -166~33                  | 0              |  |            |

**12 AUTO IRIS 2**

| <i>Item</i>     | <i>Range</i>       | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------------|----------------|--------------------|------------|
| Iris window     | 1, 2, 3, 4, 5, Var | 1              |                    |            |
| Iris window ind | On, Off            | Off            |                    |            |
| Iris level      | -99~99             | 0              |                    |            |
| Iris APL ratio  | -190~9             | 0              | Peak/mean ratio    |            |
| Iris var width  | -99~99             | 0              |                    |            |
| Iris var height | -99~99             | 0              |                    |            |
| Iris var P pos  | -99~99             | 0              |                    |            |
| Iris var V pos  | -99~99             | 0              |                    |            |
| Iris speed      | -99~99             | 0              |                    |            |
| Clip high light | On, Off            | Off            |                    |            |

**13 FUNCTION 3**

| <i>Item</i>      | <i>Range</i>     | <i>Factory</i> | <i>description</i>    | <i>BBC</i> |
|------------------|------------------|----------------|-----------------------|------------|
| Wht filter inh   | On, Off          | Off            |                       |            |
| Color bar sel    | EBU, SNGS, SMPTE | EBU            | SMPTE bars are useful |            |
| Rec tally        | Upper, Both      | Upper          |                       |            |
| Color vf input   | Comp, VBS, Both  | Comp           |                       |            |
| User & All only  | On, Off          | Off            | Disables deeper menus |            |
| RM common memory | On, Off          | Off            | Remote control        |            |
| RM rec start     | RM, Cam, Para RM | RM             |                       |            |

**14 GENLOCK**

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------|----------------|--------------------|------------|
| Genlock         | On, Off      | On             |                    |            |
| Return video    | On, Off      | Off            |                    |            |
| GL H phase      | -57~142      | 0              |                    |            |
| GL SC phase     | -99~99       | 0              |                    |            |
| GL SC 0/180 sel | 0, 180       | 180            |                    |            |

**15 ND COMP**

Correct colour variation in ND filters

| <i>Item</i>      | <i>Range</i> | <i>Factory</i> | <i>description</i>         | <i>BBC</i> |
|------------------|--------------|----------------|----------------------------|------------|
| ND offset adjust | On, Off      | Off            |                            |            |
| Clear ND offset  | Exec         |                | This is a command to do it |            |

**16 AUTO SHADING**

| <i>Item</i>       | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-------------------|--------------|----------------|--------------------|------------|
| Auto blk shading  | Exec         |                |                    |            |
| Reset blk shading | Exec         |                |                    |            |
| Test out select   | Enc, R, G, B | Enc            |                    |            |
| Master gain(tmp)  | -3~48dB      |                |                    |            |

**17 DISC**

| <i>Item</i>      | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|--------------|----------------|--------------------|------------|
| Delete last clip | Exec         |                |                    |            |
| Delete all clips | Exec         |                |                    |            |
| Quick format     | Exec         |                |                    |            |

**18 NETWORK**

| <i>Item</i> | <i>Range</i>      | <i>Factory</i> | <i>description</i>              | <i>BBC</i> |
|-------------|-------------------|----------------|---------------------------------|------------|
| DHCP        | Enabl, Dsabl      | Dsabl          |                                 |            |
| IP address  | Exec              |                | Goes into submenu to set values |            |
| Subnet mask | Exec              |                |                                 |            |
| Def.gateway | Exec              |                |                                 |            |
| Link speed  | 10Mb, 100Mb, Auto | Auto           |                                 |            |

**FILE****1 USER FILE 1**

| <i>Item</i>    | <i>Range</i>  | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|----------------|---------------|----------------|--------------------|------------|
| User file load | Exec          |                |                    |            |
| User file save | Exec          |                |                    |            |
| F.ID           | 12 characters |                |                    |            |
| User preset    | Exec          |                |                    |            |

**2 USER FILE 2**

| <i>Item</i>       | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-------------------|--------------|----------------|--------------------|------------|
| Store user preset | Exec         |                |                    |            |
| Clear user preset | Exec         |                |                    |            |
| Customize reset   | Exec         |                |                    |            |
| Load custom data  | On, Off      | Off            |                    |            |
| Load out of user  | On, Off      | Off            |                    |            |
| Before file page  | On, Off      | Off            |                    |            |
| User load white   | On, Off      | Off            |                    |            |

**3 ALL FILE**

| <i>Item</i>      | <i>Range</i>  | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|---------------|----------------|--------------------|------------|
| All file load    | Exec          |                |                    |            |
| All file save    | Exec          |                |                    |            |
| F.ID             | 12 characters |                |                    |            |
| All preset       | Exec          |                |                    |            |
| Store all preset | Exec          |                |                    |            |
| Clear all preset | Exec          |                |                    |            |
| 3 sec clr preset | On, Off       |                |                    |            |
| Network data     | On, Off       |                |                    |            |

**3 SCENE FILE**

| <i>Item</i>  | <i>Range</i> | <i>Factory</i> | <i>description</i>                     | <i>BBC</i> |
|--------------|--------------|----------------|--|------------|
| 1            | (name)       |                | These are reports of stored file names |            |
| 2            | (name)       |                |  |            |
| 3            | (name)       |                |  |            |
| 4            | (name)       |                |  |            |
| 5            | (name)       |                |  |            |
| Standard     |              |                |  |            |
| Scene recall | Exec         |                | This is the command to do it           |            |
| Scene store  | Exec         |                |  |            |
| F.ID         | (name)       |                |  |            |

**5 REFERENCE**

| <i>Item</i>      | <i>Range</i>  | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|---------------|----------------|--------------------|------------|
| Reference store  | Exec          |                |                    |            |
| Reference clear  | Exec          |                |                    |            |
| Reference load   | Exec          |                |                    |            |
| Reference save   | Exec          |                |                    |            |
| F.ID             | 12 characters |                |                    |            |
| Scene white data | On, Off       | Off            |                    |            |

**6 LENS FILE 1**

| <i>Item</i>      | <i>Range</i>  | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|------------------|---------------|----------------|--------------------|------------|
| All file load    | Exec          |                |                    |            |
| All file save    | Exec          |                |                    |            |
| F.ID             | 12 characters |                |                    |            |
| All preset       | Exec          |                |                    |            |
| Store all preset | Exec          |                |                    |            |
| Clear all preset | Exec          |                |                    |            |
| 3 sec clr preset | On, Off       |                |                    |            |
| Network data     | On, Off       |                |                    |            |

**7 LENS FILE 2**

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------|----------------|--------------------|------------|
| Lens Vmod       | -99~99       | 0              |                    |            |
| Lens centre H   | -99~99       | 0              |                    |            |
| Lens centre V   | -99~99       | 0              |                    |            |
| Test out select | Enc, R, G, B | Enc            |                    |            |
| Lens R flare    | -99~99       | 0              |                    |            |
| Lens G flare    | -99~99       | 0              |                    |            |

|                 |        |   |  |
|-----------------|--------|---|--|
| Lens B flare    | -99~99 | 0 |  |
| Lens W-R offset | -99~99 | 0 |  |
| Lens W-B offset | -99~99 | 0 |  |

**8 LENS FILE 3**

| <i>Item</i>     | <i>Range</i>  | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|---------------|----------------|--------------------|------------|
| Shading ch sel  | R, G, B, Test |                |                    |            |
| Test out select | Enc, R, G, B  | Enc            |                    |            |
| Lens H saw      | -99~99        | 0              |                    |            |
| Lens H para     | -99~99        | 0              |                    |            |
| Lens V saw      | -99~99        | 0              |                    |            |
| Lens V para     | -99~99        | 0              |                    |            |

**9 MEMORY STICK**

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-----------------|--------------|----------------|--------------------|------------|
| M.S. format     | Exec         |                |                    |            |
| MS in > jump to | Exec         |                |                    |            |

**DIAGNOSIS****1 HOURS METER**

| <i>Item</i>     | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> | reports |
|-----------------|--------------|----------------|--------------------|------------|---------|
| Operation       |              |                |                    |            |         |
| Operation (rst) |              |                |                    |            |         |
| Spindel (rst)   |              |                |                    |            |         |
| Laser (rst)     |              |                |                    |            |         |
| Loading (rst)   |              |                |                    |            |         |
| Seek (rst)      |              |                |                    |            |         |

**2 TIME/DATE**

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> |
|-------------|--------------|----------------|--------------------|------------|
| Adjust      | EXEC         |                |                    |            |
| Hour        | EXEC         |                |                    |            |
| Min         | EXEC         |                |                    |            |
| Sec         | EXEC         |                |                    |            |
| Year        | EXEC         |                |                    |            |
| Month       | EXEC         |                |                    |            |
| Day         | EXEC         |                |                    |            |

**3 ROM VERSION 1**

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> | reports |
|-------------|--------------|----------------|--------------------|------------|---------|
| AT          | 1.03         |                |                    |            |         |
| SYS1        | 1.08         |                |                    |            |         |
| SYS2K       | 1.00         |                |                    |            |         |
| DRIVE       | 1.05         |                |                    |            |         |
| FP          | 1.04         |                |                    |            |         |

**4 ROM VERSION 2**

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i> | <i>BBC</i> | reports |
|-------------|--------------|----------------|--------------------|------------|---------|
| VAIN        | 1/05         |                |                    |            |         |
| PIER        | 1.13         |                |                    |            |         |
| PRX.V       | 1.00         |                |                    |            |         |
| PRX.A       | 1.01         |                |                    |            |         |
| A.DSP       | 1.00         |                |                    |            |         |

**5 DEV STATUS**

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i>       | <i>BBC</i> | reports |
|-------------|--------------|----------------|--------------------------|------------|---------|
|             |              |                | Reports on device status |            |         |

**6 OPTION BOARD**

| <i>Item</i> | <i>Range</i> | <i>Factory</i> | <i>description</i>          | <i>BBC</i> | reports |
|-------------|--------------|----------------|-----------------------------|------------|---------|
|             |              |                | Reports on option installed |            |         |