

## Colorimetric and Resolution requirements of cameras

Alan Roberts

### **ADDENDUM 10: Menu settings for Panasonic DVCPPro50 (AJ-SDX900-E)**

**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.**

Assessment was made on a sample of the AJ-SDX900, a 625-line (576 active) fixed frame-rate camera. Although this is not an HDTV camera, it is sufficiently unique to warrant special treatment. The unique feature of this camera is that it is switchable between interlace and progressive modes and thus can generate a “film look” in the camera. The camera has 3 ccids and record using conventional DVPro tape formats.

The camera is 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.

In this setup, gamma correction and knee are adjusted to capture about 2.5 stops of overload, and 1 stop of underexposure, to mimic film performance.

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### ADDENDUM 10: Menu settings for

### Panasonic DVCPPro (AJ-SDX900-E)

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, {v} video.

#### SYSTEM MENUS

##### System mode

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Camera Mode	50i,25p	50i	Interlace/proscan	{v}50i, {f}25p
V.Res (25p)	Intrlce/Prog	Intrlce	Vertical resolution in 25p	Intrlce
Rec Mode	15:9/50M,4:3/50M,16:9/25M,4:3/25M	16:9/50M	Shape, tape data (Mb/s)	
PB Mode	Manual,Auto	Auto	Auto read format from tape	
Rec Tally	Red,Green,Char	Red		

##### Option mode

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
P.Off GPS Data	Hold,Clear	Clear	Holds GPS data while power off	
Component Out	On,Off	Off	Video via 26pin in power save	
26pin Control	Off,Both,On	Off	Control via 26pin connector	
26pin Ctl Default	Normal,Special	Normal	VTR/SS initial state	
SDI Embedded Audio	On,Off	On		
SDI metadata	On,Off	On		
SDI EDH	On,Off	On	Adds error detection flags to SDI	

##### Rec function

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Interval Rec Mode	On,One shot,Off	Off	Single frame recording possible with YA903G card	
Rec Time	00s01f~59s24f	00s01f	Frames to record, min 2 sec without 903G	
Pause Time	01f~23h59m59s24f	04m59s24f	Interval between recordings	
Take Total Time	None~5day	None	Session duration	
Total Rec Time	00s01f~over100m,None	Display only	=REC+PAUSE+TOTAL TAKE	
Audio Rec	Off,On	Off		
Start Delay	0sec~10sec	0sec	Delay to start full recording when in interval mode	
Pre Rec Mode (YA903G)	Off,0sec~15sec	7sec	Preroll time	
News Rec Mode	Off,0.2sec~2sec	Off	Ignores this Stop-Start time	
Retake Mode	On,Off	Off	Refer to manual	

##### Output sel

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Video Out Sel	VBS,VF,SDI	VBS	PAL,vf Y signal,or SDI if fitted	
Output Char	TC,Status,Menu	Menu	Characters on Video/Mon outputs	
Monitor Out Char	On,Off	Off	Puts characters on Mon output	
Take Total Time	None~5day	None	Session duration	
VF Mode	EE/PB,PB	EE/PB	EE=camera at all times	

##### Genlock

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Genlock	Int,Ext,26pExt	Int	Genlock source	
H.Phase Coarse	-50~+50	0	Horizontal timing	
H.Phase Fine	-160~160	0	Also affects subcarrier phase	
SC.Phase Coarse	0~3	1		

DSC.Phase Fine	-75~75	0	Set H.Phase first
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**PAINT MENUS****ROP**

remote operating panel, mimics ECU. Not available if ECU is plugged in

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Master Ped	-200~200	18	Master lift	0
Master Dtl	-31~31	0		0
Master Gamma	0.35~0.75	0.45	In 0.1 steps, stored in gain switch	0.37 {v}, 0.4 {f}
Knee Point	70~107%	85%		
Knee Slopw	0~99	50		
R Gain	-200~200	0		0
G Gain	-200~200	0		0
B Gain	-200~200	0		0
R Pedestal	-200~200	0		0
G Pedestal	-200~200	0		0
B Pedestal	-200~200	0		0

**Matrix (User preset) A,B**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Matrix Table	A,B	A	Two user tweakable matrices	
Matrix R-G	-31~31	30		
Matrix R-B	-31~31	5		
Matrix G-R	-31~31	16		
Matrix G-B	-31~31	19		
Matrix B-R	-31~31	16		
L Matrix Table	Off,A,B	A	Select matrix in Low	
M Matrix Table	Off,A,B	A	Mid	
H Matrix Table	Off,A,B	A	High gain setting	

**Color Correction**

rather dangerous territory

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
R (Sat/Phase)	-63~63	0		0
R-Mg (Sat/Phase)	-63~63	0		0
Mg (Sat/Phase)	-63~63	0		0
Mg-B (Sat/Phase)	-63~63	0		0
B (Sat/Phase)	-63~63	0		0
B-Cy (Sat/Phase)	-63~63	0		0
Cy (Sat/Phase)	-63~63	0	Adjusts colour in 45 degree segments, tweaks saturation and hue.	0
Cy-G (Sat/Phase)	-63~63	0		0
G (Sat/Phase)	-63~63	0		0
G-Yl (Sat/Phase)	-63~63	0		0
Yl (Sat/Phase)	-63~63	0		0
Yl-R (Sat/Phase)	-63~63	0		0

**Low Setting**

Low Level Gain switch position

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Master Gain	-3~30dB	0	dB settings, 3dB steps	0
H Dtl Level	0~63	28		0 {f} 4{v}
V Dtl Level	0~31	12		0 {f} 2{v}
Dtl Coring	0~15	2		2
H Dtl Freq	0~31	20		31
Level Dep	0~5	1	Low luma zone, no correction	1
Gamma	0.35~0.75	0.45	0.01 steps	0.4 {f} 0.37 {v}
Black Str	-3~OFF~+3	OFF	No other controls	2
Matrix Table	A/B/OFF	A	User preset matrices	OFF
Col. Corr.	ON/OFF	OFF	12 segment adjust, see above	OFF

**Mid Setting**

Mid Level Gain switch position

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Master Gain	-3~30dB	6	dB settings, 3dB steps	9
H Dtl Lev	0~63	20		0 {f} 4v}

V Dtl Lev	0~63	10		0 {f} 2{v}
Dtl Coring	0~15	3		3
H Dtl Freq	0~31	20		31
Level Dep	0~5	1	Low luma zone, no correction	1
Gamma	0.35~0.75	0.45	0.01 steps	0.4 {f} 0.37 {v}
Black Str	-3~OFF~+3	OFF		2
Matrix Table	A/B/OFF	A	User preset matrices	OFF
Col. Corr.	ON,OFF	OFF	12 segment adjust, see above	OFF

**High Setting**

High Level Gain switch position

Item	Range	Factory	description	BBC
Master Gain	-3~30dB	12	dB settings, 3dB steps	18
H Dtl Lev	0~63	10		0 {f} 4{v}
V Dtl Lev	0~63	10		0 {f} 2{v}
Dtl Coring	0~15	8		8
H Dtl Freq	0~31	20		31
Level Dep	0~5	3	Low-luma zone, no correction	3
Gamma	0.35~0.75	0.45	0.01 steps	0.4 {f} 0.37 {v}
Black Str	-3~OFF~+3	OFF		1
Matrix Table	A/B/OFF	A	User preset matrices	OFF
Col. Corr.	ON,OFF	OFF	12 segment adjust, see above	OFF

**Additional Dtl 2**

Detail, extra controls

Item	Range	Factory	description	BBC
Knee Apa Lvl	OFF,1~5	2	Correction in knee compressed zone	2
Chroma Dtl	Off,1~5	Off	Y into C edge boosting	Off
Dtl Gain +	-31~31	0	H correction, +ve going edges	0
Dtl Gain -	-31~31	10	H correction, -ve going edges	0
Dtl Clip	0~63	0	Clip level of detail correction	47
Dtl Source	(G+B)/2, (R+G)/2, (2G+R+B)/2, (3G+R)/2, R,G	(R+G)/2		(R+G)/2
H.Dtl Line Mix	0,1H,2H	1H		1 {f} 2{v}
Corner Dtl	On,Off	On	Extra correction in corners	On

**Skin Tone Dtl**

Item	Range	Factory	description	BBC
Skin Tone Dtl	ON,OFF	OFF		OFF
Skin Tone Zebra	ON,OFF	OFF	VF level has external control	OFF
Skin Dtl Coring	0~7	5		5
Y Max	0~255	190	Max luma level for boost	190
Y Min	0~255	10	Min luma level for boost	10
I Center	0~255	30	I axis mean level for boost	30
I Width	0~255	35	I axis min level for boost	35
Q Width	0~255	10	Q axis max level for boost	10
Q Phase	0~255	0	Q axis min level for boost	0

**Cam Main Menu 1, Knee Level**

Item	Range	Factory	description	BBC
Master Ped	-200~200	10	Duplicate entry for pedestal	0
Manual Knee	ON,OFF	ON	Valid only if AUTO is off	ON
Knee Point	80%~107%	85	Manual break point	75 {f} 80 {v}
Knee Slope	0~99	50	Gain in knee zone, about 1.5 stops overload	53 {f} 99 {v}
White Clip	ON,OFF	ON		ON
White Clip Lvl	90%~109%	105%		105%
A. Knee Point	80%~107%	85%	Auto knee point	85%
A Knee Level	100~109	105		105
A.Knee Response	1~4	4	Auto knee response speed	4

**Gamma**

Differential, colour tweaking

Item	Range	Factory	description	BBC
Master Gamma	0.35~0.75	0.45		0.4 {f} 0.37 {v}
R Gamma	-15~15	0	Set R away from Master	0

B Gamma	-15~15	0	Set B away from Master	0
Gamma Mode Sel	Std,Film1,Film2	Std	Film-type gammas, 2 is steeper than 1	Film2 {f} Std {v}

**Flare**

Item	Range	Factory	description	BBC
R.Flare	0~100		Set depending on lens, this is typical of powered zoom lenses	0
G.Flare	0~100			0
B.Flare	0~100			0

**Camera Settings**

Item	Range	Factory	description	BBC
Detail	On,Off	On		Off {f} On {v}
Disp Mode	1~3	3	Type of messages in V/F	3
High Color	On,Off	Off	Hue/Saturation boost at high levels	Off
Gamma	On,Off	On		On
Test Saw	On,Off	Off		
Flare	On,Off	On		
H-G Compe	On,Off	On	Wide-band detail enhancement	

**VF****VF Displays**

Item	Range	Factory	description	BBC
Disp Condition	Normal/Hold	Normal	Show switch status or not	Normal
Disp Mode	1,2,3	3	1=off,2=some,3=all	3
VF Out	Y,NAM,R,G,B	Y	What you see	Y
VF Dtl	0~5	3	Extra detail gain	4
Zebra 1 detect	50%~110%	70%		65% {f} 70% {v}
Zebra 2 detect	50%~110%	85%		100%
Zebra 2	On,Off,Spot	Spot	SPOT works only if Zebra 2>1	Spot
Low Light Lvl	Off,20%~45%	45%	Warns at low light level	45%
ECU menu Disp	On,Off	Off	Shows menus when UCU is connected	Off
50M Indicator	On,Off	Off	Indicates recording at 50Mb/s	Off
Marker/Char Lvl	50%~100%	50%	Marker/Character brightness	100%

**VF Marker**

Item	Range	Factory	description	BBC
Table	A,B	A	Switch between AB setups set below	
Centre Mark	Off,1~4	1	Cross size/type	
Safety Zone	Off,1,2	2	1=box, 2=corners	
Safety Area	80%~100%	90%		
Frame Sig	4:3,13:9,14:9,Vista	4:3	Vista is 16:8.65!	14:9
Mark	On,Off	OFF	Frame marker	OFF
Lvl	0~15	15	Picture level outside frame mark	15

**User Box**

Item	Range	Factory	description	BBC
User Box	On,Off	Off	Custom frame	
User Box Width	1~100	13		
User Box Height	1~144	13		
User Box H Pos	-50~+50	0		
User Box V Pos	-144~+144	0		

**VF Indicator 1**

Item	Range	Factory	description	BBC
Extender	ON,OFF	ON	Lens extender	On
Shutter	ON,OFF	ON	Shutter speed display	On
Filter	ON,OFF	ON	Filter position	On
White	ON,OFF	ON	Show AWB or Preset A/B	On
Gain	ON,OFF	ON		On
Iris	IRIS,S+IRIS,OFF	S+IRIS	Iris/Super Iris (?) display	S+Iris
Camera ID	ON,OFF	ON	Show camera ID with bars	On

ID Position	UpperR,UpperL, LowerR,LowerL	UpperL		
Date/Time	On,Off	Off		Off
Zoom Lvl	On,Off	On	Focal length	ON
Color Temp	On,Off	On		ON
Camera Mode	On,Off	On,Off	Shape/Data rate indicator	Off

**VF Indicator 2**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Tape	On,Off	On	Lens extender	On
Battery	On,Off	On	Shutter speed display	On
Audio Lvl	On,Off	On	Filter position	On
TC	TCG,TCR, TCG/TCR,Off	Off		Off
VTR Warning	Always,Normal,Off	Normal		Normal
Save LED	Save&Tape,Save	On,Off		Save

**Mode Check Ind**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Status	On,Off	On		On
!LED	On,Off	On		On
Function	On,Off	On		On
Audio	On,Off	On		On
P.On Ind	On,Off	On		On

**! LED**

## VF warnings

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Gain (0dB)	On,Off	On		On
Gain (-3dB)	On,Off	Off		Off
DS Gain	On,Off	On		On
Shutter	On,Off	On		On
White Preset	On,Off	Off		Off
Extender	On,Off	On		On
Black Str	On,Off	Off		Off
Matrix	On,Off	Off		Off
Color Correct	On,Off	Off		Off
Filter	On,Off	Off		Off
Super V	On,Off	Off		Off
25M/50M	Off,25M,50M	Off		Off
ATW	On,Off	Off		Off
D.Zoom	On,Off	Off		Off

**OPERATION****Camera ID**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
ID1			Max 10 characters	
ID2				
ID3				

**Shutter Speed**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Syncrho Scan	On,Off	On	Speed set by buttons near filter wheel, can go down to 1/25.3sec	On
Super V	On,Off	Off		On
Position 1	On,Off	On		On
Position 2	On,Off	On	ON adds items to list of settings that can be	On
Position 3	On,Off	On	cycled through using the little switch below	On
Position 4	On,Off	On	the lens.	On
Position 5	On,Off	On		On
Position 6	On,Off	On		On

**Shutter Select**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Super V Mode	Frm1,Frm2	Frm1	1=normal, 2=after-image reduction mode	Frm1
Position 1		1/60		1/60
Position 2		1/120		1/120
Position 3	1/60,1/120,	1/250		1/250
Position 4	1/250,1/500,	1/500		1/500
Position 5	1/1000,1/2000	1/1000		1/1000
Position 6		1/2000		1/2000

**User SW**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
User Main Sw	Inh,S.Gain,DS.Gain,S.Iris,I.Over,	S.Gain	Allocate functions to switches	
User 1 Sw	S.Blk,B.Str,AudioCh1,AudioCh2,	D.Zoom		
User 2 Sw	RecSw,Yget,RetSW,ATW,D.Zoom	DS.Gain		

**SW Mode**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Ret Sw	RecCheck,CamRet	RecCheck		RecCheck
S.Blk Lvl	Off,-10,-20,-30	-10	Super black level	-10
Auto Knee Sw	On,Off	On		Off
Shd,Abb Sw Ctl	On,Off	On	Does black shading with black balance	On
Color Bars	SMPTE,Full,Split,Arib	Full	Arib=multiformat bars	Full
S.Gain Off	L/M/H,S.Gain	L/M/H	Which switch cancels Super Gain	L/M/H
DS.Gain Off	L/M/H,DS.Gain	DS.Gain	Which switch cancels Digital Super Gain	DS.Gain
D.Zoom Sel	Zoom,Focus	Zoom	Allows digital zoom as focus assistance	Zoom
ECU Data Save	On,Off	Off	ON saves ECU (ROP) settings when entered	Off

**White Balance Mode**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Filter Inh	On,Off	On	Allows separate balance data for filters	On
Shockless AWB	Off,Fast,Normal, Slow1,Slow2,Slow3	Normal	Response speed to white change	Normal
AWB Area	25%,50%,90%	25%	Central screen area	25%
AWB&ABB Offset	On,Off	Off	Resets Gain/Ped in ROP menu on balancing	Off
Color Temp Pre	3200K~5600K	3200K	AWB aim point	3200K
AWB A	Mem,Var	Mem	Var=AWB A aim point as set below	Mem
Color Temp A	3200K~5600K	3200K	AWB A Var aim point	3200K
AWB B	Mem,Var	Mem	Var=AWB B aim point as set below	Mem
Color Temp B	3200K~5600K	3200K	AWB B Var aim point	3200K
ATW Speed	Normal,Fast,Slow	Normal		Normal

**User Sw Gain**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
S.Gain 30dB			Allows each gain setting to be included or excluded from the gain lists	
S.Gain 36dB				
S.Gain 42dB				
S.Gain 48dB				
DS.Gain 6dB				
DS.Gain 12dB				
DS.Gain 20dB				

**Iris**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
A.Iris Level	0~100	35	Auto iris target level, luma	35
A.Iris Peak/Ave	0~100	40	Ratio, 0=ave'ge, 100=peak	40
A.Iris Mode	Norm1,Norm2,Centr	Norm1	1=full frame, 2=not top	Centr
S.Iris Level	0~100	80	Super Iris target level	80
Iris Gain	Cam,Lens	Cam	Where the control is	Cam
Irtis Gain Value	1~20	8		8

**FILE MENUS**

**Card Read/Write**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
R.Select	1~8	1	File number to read	1
Read			load from file	
W.Select	1~8	1	File number to write	1
Write			write to file	
Card Config			List titles on card	
Title Read			load user data	
Title1-8			Title, max 8 characters	

**Cam Card R/W Select**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
ID Read/Write	On,Off	Off	On=save cam ID to card	Off
User Menu Select R/W	On,Off	On		
System Menu R/W	On,Off	On		
Paint Menu level R/W	On,Off	On		
VF Menu R/W	On,Off	On	Load/save Menu items	
Operation Menu R/W	On,Off	On	that are/aren't marked	
Mainte Menu R/W	On,Off	On		
VTR Menu R/W	On,Off	On		

**Lens File**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
File No.	1~8	1	Lens file number	
Read			Read it	
Write			Write it	
Title1-8	ON,OFF		Max 8 characters	

**Scene File**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Read User Data.			Reads data from User area	
Scene Sel	1~4			
Read				
Write				
Reset				
Title1-3				
Title 4	Film Like		Max 8 characters	

**Initialise**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Read Factory Data			Factory reset all menu settings	
Write User Data			Save user setup (e.g. ROP values)	

**MAINTENANCE MENUS****System Check**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Color Check	On,Off	Off	Checks colour processing	Off

**Diagnostic**

card/software versions, values for test camera on 14.11.2002

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Camssoft (in)			Internal flash software version	
Camssoft (out)			External flash software version	
Cam Table			Table version	
Font Rom			Font version	
PLD(Char)			Programme software version	
PLD(Mem)			Programme memory version	
Pld(TG)			CCD drive version	

**Len Adj**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
F2.8 adj	On,Off	Off		



F16 adj	On,Off	Off	
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**Black Shading**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Correct	On,Off	On		On
Detection (Dig)			This makes it happen	ON

**White Shading**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Correct	On,Off	On		On
Detection (V Saw)			This makes it happen	

**VTR MENUS****VTR Function**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Humid Ope	On,Off	Off	=only Eject when humid	Off
Rec Start	All,Normal	Normal	=only in Power Save/Pause	Normal
Pause Timer	10,20,30,60	30	Pause before auto stop	30
ECU Rec Chk SW	R.Review,Retake	R.Review	What happens when pressing Rec Chk on Extension Control Unit	R.Review

**Battery/Tape**

Choice of battery types

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Battery Select	AJ-BP490,AU-BP402,HP-30A,Pro14,Trim14,Hytron50,Hytron100,Digital14,Digital13,Dionic,BP-H120,NP-L50,NP-L50D,Endura50,Endura80,BP-L60/90,NP-1B,TypeA,TypeB	PRO14		
Ext DC In Select	ACAdpt,AJ-BP490,AU-BP402,HP-30A,Pro14,Trim14,Hytron50,Hytron100,BP-H120,NP-L50,Endura50, Endura80,BP-L60/90,NP-1B, TypeA, TypeB	AC-ADPT	As for battery, plus external	AC-ADPT
Batt Near End Alarm	On,Off	Off	Warning bleep	Off
Batt Near End Cancel	On,Off	On	Mode switch cancels bleep	On
Batt End Alarm	On,Off	On	Warning bleep	On
Batt Remain Full	100%,70%	70%	Indicator level called "full"	70%
Tape Near End Alarm	On,Off	Of	Warning bleep	Off
Tape Near End Time	3min,2min	2min	Bleep time before end	2min
Tape End Alarm	On,Off	On	Warning bleep	On
Tape Remain	3min,5min	3min	Size of time pixel in LCD	3min

**Battery Setting 1**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
AJ-BP490	Auto,Manual (11~15)	11.5		
AU-BP402		11.5		
HP-30A		12.0		
Pro14		13.8		
Trim14		13.6		
Hytron50		13.8		
Hytron100		13.1		
BP-H120		11.7		
NP-L50		13.1		
Endura50		12.9		
Endura80		13.6		
BP-L60/90		11.0		
NP-1B		11.4		

**Battery Setting 2**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Digital14	Auto,Manual (11~16)	13.8/13.4	Near end/End	
Digital13		12.7/12.2	Near end/End	

Dionic	13.9/13.3	Near end/End
NP-L50D	13.1/12.2	Near end/End
TypeA	15.0/13.5/11.9	Full/Near end/End
TypeB	15.5/13.1/13.6	Full/Near end/End

**Mic/Audio 1**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Front VR Ch1	Front/WLRear/All/Off	Off	Audio control, Ch1	Off
Front VR Ch2	Front/WLRear/All/Off	Off	Audio control, Ch2	Off
Mic Lowcut Ch1	Front/Rear/WL/Off	Off		Off
Mic Lowcut Ch2	Front/Rear/WL/Off	Off		Off
Mic Lowcut Ch3	Front/Rear/WL/Off	Off		Off
Mic Lowcut Ch4	Front/Rear/WL/Off	Off		Off
Limiter 1	On/Off	Off		Off
Limiter 2	On/Off	Off		Off
Audio Level Ch3	On,Off	On		On
Audio Level Ch3	On,Off	On		On
Rec Ch3Ch4	Sw,Ch1/2	Sw	Source for Ch3/4 audio	Sw
Cue Rec Select	Ch1,Ch2,Ch3,Ch4,Ch1+2,Ch3+4	Ch1	Source for cue track	Vh1
Test Tone	Normal,Always,Off,ChSel	Normal	=tone with bars	Normal

**Mic/Audio 2**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Front Mic Power	On,Off	On	Phantom power	On
Rear Mic Power	On,Off	On	Phantom power	On
Audio Out	On,Off	On		On
Monitor Select	Stereo,Mix	Stereo		Stereo
Front Mic level	-40.-50dB	-40dB		
Rear Mic Ch1 Level	-40.-60dB	-60dB		
Rear Line In Level	0,+4dB	0dB		
Audio Out level	0,+4dB	0dB		
Headroom	18,20dB	18dB		
Wireless Warn	On,Off	Off	Warns when radio mic level is poor	

**TC/UB**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
UB Mode	User,Date,Time, Ext,TCG,Frmrate,Regen	User	User bits data	User
TCG Set Hold	On,Off	Off	Store TC when powered down	Off
First Rec TC	Regen,Preset	RegenN	How TC is started	Regen
P.Off LCD Display	On,Off	On	TC display when power OFF	On
TC Out	TCG,TCG/TCR	TCG		TCG

**UMID Set/Info**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Country				
Organization				
User				
Device Node		ID number		

**VTR Diagnostic**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Operation			Time in use	
Drum Running			Drum hours	
Threading			Number of tape loads	
Drum Running R			Since last reset	
Threading R			Since last reset	
VTR Syscon			System version number	
Servo			Servo version number	
Front			LCD version number	
Video FPGA			Video version number	
Pre Process FPGA			Pre Video version number	

**OPTION MENUS****Options**

<i>Item</i>	<i>Range</i>	<i>Factory</i>	<i>description</i>	<i>BBC</i>
Eng Security	On,Off	Off	Off=enable all engineering menus DO NOT SET THIS TO ON, EVER	Off
P.Half Shut	On/Off	On	Adds 50% shutter in 25p even when shutter Off	On
ID Mix Inh	On,Off	On	Inhibits adding camera ID to video	On