

Colorimetric and Resolution requirements of cameras

Alan Roberts

ADDENDUM 5a : Menu settings for

BTS/Thomson Multi-media LDK6000 version 3.2

(1080p25 – capable camera, and MCP series 9000)

Measurements and data for this appendix supplied by Richard Salmon

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.

This camera is not a camcorder, but of the conventional studio type, triax connected to a conventional ccu. It has many interesting and useful features. The camera closely resembles other, small studio cameras. It has the usual shoulder pad that makes it operable hand-held, and is no bigger than a conventional camera.

The camera is designed to operate on the 1080-line standards, but is intended to operate also on the 720-line progressive standards, and eventually on a 1080-line progressive standard. The ccds are 1920 pixels by 4320 rows, each with a 4:1 aspect ratio. To operate at 1080 lines pro-scan, rows are added together in groups of 4. For 1080 line interlace, the grouping is in sets of 8, phase shifted by 4 on alternate fields. Grouping in sets of 6 gives 720 pro-scan and so on. Derivatives of this camera may well be manufactured under different type numbers (maybe LDK7000, and certainly Viper Filmstream). In the form tested, it produced simultaneously HDTV and SDTV outputs. It can use either HDTV or conventional SDTV viewfinders and monitoring. It can operate in a mixed environment, simultaneously feeding HDTV and SDTV programme switchers but under single control. Control of the camera is by conventional OCP and MCP (Operational and Main Control Panels), and is little different from any conventional SDTV studio camera. One useful feature is that the aperture correction can be set separately for HD and SD outputs, the HD settings apply equally to the HD and SD output, but a separate AK is used for the SD output. Thus the camera can be optimised for HD images, but the SD feed can be optimised independently.

Transfer characteristic (gamma, black stretch and knee) can be set conventionally, and a good “film-look” can be obtained for post-processed production. There is a “Black Press” option which can produce a “film-look” directly from the camera.

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ADDENDUM 5a : Menu settings for BTS/Thomson Multi-media LDK6000 (1080p25 – capable camera, and MCP series 9000)

Menu items that contribute significantly to the “BBC look” are highlighted.

Camera Head System Menu Structure

MAIN Menu

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
VF >>	0 1 2 3 S						
Lens >>	0 1 2 3 S						
Video >>	2 3 S						
Install >>	0 1 2 3 S						
Files >>	1 2 3 S						
Security >>	0 1 2 3 S						
Diagnostics >>	2 3 S						
Service >>	3 S						

VF Menu

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
VF mon	2 3 S	Y,R,G,B,-G	-	operator	Y		
VF Contour >>							
VF Contour	2 3 S	On, Off	-	operator	On		
Level	2 3 S	0..99	VF cont. Off	operator	95	50	
Focus Assist	0 1 2 3 S	On,Off	-	operator	On		
Zebra >>							
Zebra mode	3 S	On,Off	"2" VF used	operator	Off		Switch on VF
level (%)	3 S	Level, band	Zebra Off	operator	Level		
contrast	3 S	0..99	Zebra Off	operator	90		
Centre Cross	0 1 2 3 S	0..99	Zebra Off	operator	15		
Safe Area	0 1 2 3 S	On,Off	-	operator	Off		
Iris Ind.	0 1 2 3 S	On,Off	SuperXPander	operator	Off		
Zoom Ind.	0 1 2 3 S	On,Off	-	operator	Off		
Box downright	0 1 2 3 S	Fltr,Off	-	operator	Off		icates filters
Marker	0 1 2 3 S	Off,4:3,16:9,14:9	-	operator	Off		actually " 4:3" On, Off on the camera
Marker Type	0 1 2 3 S	Dot,Shad, Both	-	operator	Off		"Shad" doesn't do the right thing
Ind. White	2 3 S	0..99	-	operator	28	70	viewfinder text brightness
Ind. Black	2 3 S	0..99	-	operator	30		
Display	2 3 S	On,Time	-	operator	Time		useful to set this to On for set-up
Menu Time	3 S	0..10 sec.	Display On	operator	10		
Info Time	3 S	0..20 sec.	-	operator	5		
Rotary Speed	3 S	0..10 sec.	-	operator	5		
VF Notch	2 3 S	On,Off	-	operator	Off		
Ext Asp Ratio	0 1 2 3 S	4:3,16:9	-	operator	4:3		
Loc Asp Ratio	0 1 2 3 S	4:3,16:9	-	operator	16:9		

LENS Menu

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
Lens Type	0 1 2 3 S	Std,WA	-	operator	STD		two basic settings
Auto Iris	0 1 2 3 S	On, Off	SuperXPander		Off		
Peak/Average	3 S	0..99	Auto Iris off	scene	65		
AutoIris Setpoint	3 S	0..99	-	scene	35		
Mom Iris Setpoint	3 S	0..99	-	scene	50		
Manufacturer	0 1 2 3 S	Fuj, Ang, Can, Other	-	-	Fuj1		for large lens adapter
Extended iris >>	3 S						
Min iris	3 S	5.6, 8, 11, 16	-	operator	F16.0		
Max iris	3 S	1.4, 2, 2.8, 4, 5.6	-	operator	F2.0		
Min exp time	3 S	1/100, 1/200, 1/500	-	operator	1/500		
Max Gain	3 S	0..15 (3db steps)	-	operator	15dB		
Autoiris const >>	3 S						
Iris gain	3 S	5..10	-	-	-		

VIDEO Menu

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
-----------	------------	--------	------------	------	---------	-----	---------

Colour filter	2 3 S	00 .. 99	3k2,5K6,7K5, AWC	scene	50		
Contour >>							
Contour	S	Off, On	-	scene	On		
Level	3 S	00 .. 99	Contour = Off	scene	50	26	
Src Sel >>	3 S	Y,R,G,RG	-	scene	R+G		
<more> >>							
vert cont	3 S	0..99	Contour = Off	scene	25	29	
coarse/fine	3 S	0..99	Contour = Off	scene	50	99	
Soft Cont >>							
Soft Contour	2 3 S	Off, On	-	scene	Off		
Level	2 3 S	0..99	Soft Cont=Off	scene	70		
Knee Contour	3	Off, 1,2,3,4		scene	Off		
Skin >>							
Skin	2 3 S	Off, 1, 2, 1+2	-	scene	Off		
Auto	2 3 S	Off, On	Skin=Off or 1+2	-	Off		
View	2 3 S	Off, On	On Skin=Off		Off		
Skin Level	2 3 S	0..99	On Skin=Off	scene	50		
<more> >>							
width1 R	3 S	0..99	Skin <> 1	scene	50		
width1 B	3 S	0..99	Skin <> 1	scene	50		
color1 R	3 S	0..99	Skin <> 1	scene	50		
color1 B	3 S	0..99	Skin <> 1	scene	50		
width2 R	3 S	0..99	Skin <> 2	scene	50		
width2 B	3 S	0..99	Skin <> 2	scene	50		
color2 R	3 S	0..99	Skin <> 2	scene	50		
color2 B	3 S	0..99	Skin <> 2	scene	50		
Black >>							
Black stretch	3 S	0..99	Blk str = Off	scene	99	70	Set to "Press", 0-49=compress, 51-99=stretch.
Master	2 3 S	0..99	-	scene	50		
<more> >>							
Red	3 S	0..99	-	scene	50		
Green	3 S	0..99	-	scene	50		
Blue	3 S	0..99	-	scene	50		
Master	3 S	0..99	-	scene	50		
Gain >>							
Red	2 3 S	0..99	-	scene	50		
Green	2 3 S	0..99	-	scene	50		
Blue	2 3 S	0..99	-	scene	50		
Knee >>							
Knee	2 3 S	Off, Var	-	scene	Off	On	For film mode
Knee Type	3 S	Y, NAM	-	scene	Y		
Slope M	3 S	0..99	knee <> var	scene	60	90	1.5 stops, 94=2.5 stops, but colour goes wrong in whites!
Point M	3 S	0..99	knee <> var	scene	50	17	Knee at 600mV after gamma
Gamma >>							
Gamma	2 3 S	Nom,Low,Pre	-	scene	Nom		
Master	3 S	0..99	gamma<>Pre	scene	76		
Red	3 S	0..99	gamma<>Pre	scene	76		
Green	3 S	0..99	gamma<>Pre	scene	76		
Blue	3 S	0..99	gamma<>Pre	scene	76		
Matrix >>							
Matrix	3 S	EBU,RAI,BBC,B/W, skin,1:1,CFL,var1&2	-	scene	Skin	BBC	
Saturation	2 3 S	0..99	-	-	50	40	Operator has control on OCP

INSTALL Menu LDK 5460 Triax Adapter

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
Video Mode	2 3 S	1080i50, 1080i59, 1080psf25,720p59	Not Available	-	-		1080psf25 for film mode
Disable Camera	0 1 2 3 S	Off, On	-	-	Off		
IR receiver	0 1 2 3 S	Off, On	-	operator	Off		
Intercom >>	0 1 2 3 S						
Side tone	1 2 3 S	0..99	-	operator	50		
Cam. Mic	1 2 3 S	Off,Switch, Track, Prod	Cam. Mic=On	operator	Switch		
Cam. Mic Gain	1 2 3 S	0dB,40dB	-	operator	40dB		
Cam. Mic Pwr	1 2 3 S	On,Off	-	operator	Off		
Cam. Prod	1 2 3 S	Off,L,R,Both	-	operator	Off		
Cam. Eng	1 2 3 S	Off,L,R,Both	-	operator	Off		
Cam. Prog	1 2 3 S	Off,L,R,Both	-	operator	Off		
Cam. Track	1 2 3 S	Off,L,R,Both	-	operator	Off		
Cam. Track lvl	1 2 3 S	0..99	-	operator	50		
Track Mic To	1 2 3 S	Off,Cam,Eng, Prod,All	-	operator	Off		
Track Mic Gain	1 2 3 S	0dB,40dB	-	operator	40dB		

Track Mic Pwr	1 2 3 S	On,Off	-	operator	Off
Track Source	1 2 3 S	Side,Eng	-	operator	Side
Cam. Mic To	1 2 3 S	CH1,CH2	-	operator	CH1
Audio >>					
Audio 1 Gain	1 2 3 S	-22 to -64 by 6	-	operator	-64dB
Audio 1 HPF	1 2 3 S	On,Off	-	operator	Off
Audio 2 Gain	1 2 3 S	-22 to -64 by 6	-	operator	-64dB
Audio 2 HPF	1 2 3 S	On,Off	-	operator	Off
Notch	3 S	Off, On	-	operator	Off
Exposure >>					
Lighting	1 2 3 S	-10..+10	Exp<>50,60Hz	scene	0
Clean Scan >>					
Mode	1 2 3 S	Norm,Extended	-	scene	Normal
Value	1 2 3 S	*	-	scene	-
Gain preset >>					
Gain - (dB)	2 3 S	-3,-6	-	operator	-3dB
Gain + (dB)	2 3 S	3,6,9	-	operator	3dB
Gain ++ (dB)	2 3 S	6,9,12	-	operator	6dB
Private Data	0 1 2 3 S	C->B,B->C,B<->C	-	operator	Inter

Press switch for 2 seconds

* See section 5 of Operation Manual 'Shooting Screens'

FILES Menu

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
Store scenefile >>							
File select	2 3 S	sacm1..4, scard1..4	-	-	-		
Store	2 3 S	Exec	-	-	-		
Recall scenefile >>							
File select	2 3 S	standard, scam1..4, scard1..4	-	-	-		
Recall	2 3 S	Exec	-	-	-		
Store oper. file >>							
File select	1 2 3 S	ocam 1, ocard1..2	-	-	-		
Store	1 2 3 S	Exec	-	-	-		
Recall oper. file >>							
File select	1 2 3 S	standard, ocam1, ocard1..2	-	-	-		
Recall	1 2 3 S	Exec	-	-	-		
Attributes >>							
File select	2 3 S	available files	-	-	-		
File name	2 3 S		-	-	-		
Attribute	2 3 S	R/W, R	no card	-	R/W		

SECURITY Menu

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
Installed Level	2 3 S	user0..user3	no owner	-	u3		Level 0 is most restrictive, level 3 do anything. Must have pin.
Run Hours >>							
Days ago	2 3 S	0 ... 30	card or PIN	-	0		Seemed to work without owner card.
Set Time >>							
Hour	2 3 S	0 ... 23		-	-		
Minute	2 3 S	0 ... 59		-	-		
Set Date >>							
Year	2 3 S	0 ... 99		-	-		
Month	2 3 S	1 ... 12		-	-		
Day	2 3 S	1 ... 31		-	0		
PIN code >>							
Four digits	0 1 2 3 S	0000 ... 9999	no owner card/PIN	-	0000		
Customer files >>							
Stor cust. Scn	0 1 2 3 S	Exec	no owner card/PIN	-	-		
Stor cust. Op	0 1 2 3 S	Exec		-	-		
Green Button >>							
Standard	0 1 2 3 S	Factory/Customer	no owner card/PIN	-	Factory	Cust.	Ensure that BBC "Customer" settings installed on reset
Scene file	0 1 2 3 S	On,Off		-	On		
Operator file	0 1 2 3 S	On,Off		-	On		

DIAGNOSTICS Menu

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
Communication >>							
Base Station	2 3 S	Ok, NotOk	LDK 5600	-	-		
OCP	2 3 S	Ok, NotOk		-	-		
MCP	2 3 S	Ok, NotOk		-	-		
Adaptor Type	2 3 S	Triax, DVCPRO, ..		-	-		Triax
Sensor Type	2 3 S	IT,ITW,FT,DPM		-	-		DPM
Sensor Voltage	2 3 S	Ok, NotOk		-	-		
Shutter Run	2 3 S	Run, Stop		-	-	Run	
Front Power	2 3 S	Ok, NotOk		-	-		
Y carrier	2 3 S	Ok, NotOk		-	-		
Cam. 12nc	2 3 S	...		-	-		3391
Cam. Version	S	...		-	-		3.2
Cam. Status	2 3 S	...		-	-		15

Cam. Boot ver.	2 3 S	...	-	-	-	4.7
Cam. FPGA ver.	2 3 S	...	-	-	-	1.6
Adapter 12nc	2 3 S	...	-	-	-	3435
Adapter Version	S	...	-	-	-	2.0
Adapter Status	2 3 S	...	-	-	-	5
PPG Status						255 - not in manual

SERVICE Menu

Menu text	User level	Values	Blocked if	File	Default	BBC	Comment
Sawtooth	3 S	Off, On	-	-	Off		
Sawt Select	3 S	PrPr, Asic	-	-	PrPr	Asic	PrPb on camera tested
ViPr Test	S	Int/Ext	-	-	Int		
LPC	S	Off, On	-	-	On		
BPC	S	Off, On	-	-	On		
Calibrations >>							
3200K	S	Off, Run	-	-	Off		
3200K reset	S	Cust,Fact	-	-	Fact		
Shutter phase	S	-30..+30	-	-	0		
Scaler >>							
Encoder	3 S	Off,On	-	-	Off		"On" on camera tested
SDI	3 S	Off,On	-	-	Off		
Encoder bars	3 S	Off,On	-	-	Off		
EPLD Test	S	Off,Sawt,Bars	-	-	Off		
Chroma	0 1 2 3 S	Off, On	-	-	On		

MCP menu settings – Series 9000

Menu Button Unlabelled 1 - No menu

Menu Button Unlabelled 2 - SDTV Contour

Functions	Parameters	Factory File	BBC	Comments
Level >>				
Level Dep	0..99	50	50	SD values are not recalled from scene file on set-up card. so must be entered manually. They control aperture correction to the downconverted output, and are always on. They are independent of and extra to the HD contour values.
V-level	0..99	25	59	
Level	0..99	50	26	
Freq >>				
Coarse/fine	0..99	50	99	
Noise Slicer	0..99	5	06	
Soft >>				
Soft	0..99	70		

Transfer

Functions	Parameters	Factory File	BBC	Comments
Execute	state, Cam NR.			Transfer setup from one camera head to another.

Set Up

Functions	Parameters	Factory File	BBC	Comments
Black Str >>				
Black Stretch	On / Off	Off	On	On for film look, Off for video Set to "Press", 0-49=compress, 51-99=stretch.
Level	0-99	99	70	
Matrix	EBU,RAI,BBC,B/W,skin,1:1,CFL,var1&2	Skin	BBC	
Mtx R				
Mtx G				
Mtx B				
Mat sequence	M -> G , G -> M	G->M	M->G	
Video Mode	1080i50, 1080i59, ?, 720p59			"?" is 1080psf25

Maint

Functions	Parameters	Factory File	BBC	Comments
Timing >>	On, Off			Down-convert Pal Output
	HPh/Subc Fine/Subc Coarse	22/50/180		
Audio >>	MCP/External	ext		
Audio 1	-22 .. -64 dB in 6dB steps	-64 dB		
Audio 2	-22 .. -64 dB in 6dB steps	-64 dB		
Cam. Disable	On / Off	Off		
Iris P/A	0-99	65		
Lamp >>				
On-air lamp	Disable, Enable			
Dim Level	50	50		

Diagnose

Functions	Parameters	Factory File	BBC	Comments
MCP				407.2090 ST.24

Head		407.3391 ST.15
Base		407.3425 ST.26
OCP	76	
Test Keys		
Test Rotaries		
Test LEDs		
Test screen		

System Install

Functions	Parameters	Factory File	BBC	Comments
OCP Var Black Stretch	Yes / No	Yes		
OCP Var Gamma	Yes / No	Yes		
OCP Var Flare	Yes / No	Yes		
OCP Var Saturation	Yes / No	Yes		
OCP White Clip	Yes / No	Yes		
OCP Knee Source	Yes / No	Yes		
OCP Knee Slope	Yes / No	Yes		
OCP Knee Point	Yes / No	Yes		
OCP Lock	Total / Upper	Total		
Black Contrast (appears to be mis-named)	Press / Stretch		Press	Allows OCP control to stretch or compress blacks, useful in clipping black noise if gain has been used.
Standard Definition	cust / fact		cust	
Recall install File				
Store Install file				

MCP Install

Functions	Parameters	Factory File	BBC	Comments
Call Buzzer	On, Off	On		
Key click	On, Off	On		
MCP Panel Lock	Total / Upper	Total		
Brightness lcd >>				Brightness of Iris and Master Black indication
Screen	0-99	75		
Contrast	0-99	25		
Br Iris	0-99	75		
Camera Preset	No cam, cam1, ... cam15	No cam		
Mon Preset 1	Ext1, Ext2, Yext1, Yext2, R, G, B, Sup, CVBS, Seq, Y	Ext1		
Mon Preset 2	Ext1, Ext2, Yext1, Yext2, R, G, B, Sup, CVBS, Seq, Y	Ext2		
Scene File recall	Direct / recall	Direct		
PXM Follow	On, Off	Off		
Indicator range	0 - 99, -99 - 99	0 - 99		
MCP Preset Number	MCP 1, 2, 3			Only applicable if more than one MCP in use

Black

Functions	Parameters	Factory File	BBC	Comments
Red	0-99	50		
Green	0-99	50		
Blue	0-99	50		
Master	0-99	50		

Flare

Functions	Parameters	Factory File	BBC	Comments
Flare	on, off	on		Required if you are using a lens on the camera!
Red	0-99	10		
Green	0-99	15		
Blue	0-99	25		

Gamma

Functions	Parameters	Factory File	BBC	Comments
Gamma	BBC04/05/06, ARD, CCIR, RAI	ARD	BBC04	

Gain

Functions	Parameters	Factory File	BBC	Comments
Red	0-99	50		
Green	0-99	50		
Blue	0-99	50		

White Shading

Functions	Parameters	Factory File	BBC	Comments
Shading	On/Off	On		
Red Hor	On/Off, Saw 50, Par 00, Gain 50	On		

Red Vert	On/Off, Saw 50, Par 00, Gain 50	On	
Green Hor	On/Off, Saw 50, Par 00	On	
Green Vert	On/Off, Saw 50, Par 00	On	
Blue Hor	On/Off, Saw 50, Par 00, Gain 50	On	
Blue Vert	On/Off, Saw 50, Par 00, Gain 50	On	

Knee

Functions	Parameters	Factory File	BBC
Slope + Pt >>			
Slope	0-99		90
Point	0-99		17
De-Sat	Off, On	Off	
Source	Y, Nam	Y	

Comments

For film mode
 1.5 stops headroom (94=2.5 stops, but tends to colour the peak whites...)
 Knee is active only above 600mV
 Does not do anything useful. 0-50 desaturates colours in knee, 50-99 does nothing.

Contour

Functions	Parameters	Factory File	BBC
HD Contour	Off / Var	Var	Off
Level >>			
Level Dep	0..99	40	54
V-level	0..99	25	29
Level	0..99	50	26
Freq >>			
Coarse/fine	0..99	50	99
Noise Slicer	0..99	5	15
Soft >>	On/Off	Off	
Soft	0..99	70	
Knee Contour	Off/01/02/03/04	Off	
Contour Source	Avg RG, R, G, Y	Avg RG	

Comments

Off for film-look
 These values are good for video look.

Skin Contour

Functions	Parameters	Factory File	BBC
Skin Contour 1	Off/On, 0-99	Off, 50	
Skin Window 1	Off/On, R 0-99, B 0-99	Off, 50, 50	
Skin Colour 1	Off/On, R 0-99, B 0-99	Off, 50, 50	
Skin Contour 2	Off/On, 0-99	Off, 50	
Skin Window 2	Off/On, R 0-99, B 0-99	Off, 50, 50	
Skin Colour 2	Off/On, R 0-99, B 0-99	Off, 50, 50	

Comments

White Clip

Functions	Parameters	Factory File	BBC
White Clip	On, Off	On	
Master	0-99	80	

Comments

Exposure

Functions	Parameters	Factory File	BBC
Var	crt, flm.,mon, 60Hz, 590Hz, Nom, 1/200	Nom	Flm
Exposure	9.9ms – 39ms	9.9	20.0 ms

Comments

Essential to film mode shooting!
 50% shutter

Encoding

Functions	Parameters	Factory File	BBC
Chroma.	On, Off	On	
Saturation	0-99	50	40

Comments

Operator hands-on control

Base Station menus

MAIN Menu

Menu text	User
<Menu Off>	O I
Video >>	O I
Monitoring >>	O I
Audio/Intercom >>	O I
SDTV >>	O I
System >>	O I
Files >>	O I
Diagnostics >>	O I

Comments

Accessed from wheel under left-hand cover.
 Double-click on wheel to enter

VIDEO Menu

Menu text	User	Values	Default	Blocked if	File	Comments
Colour Bar >>						
Colour Bar	O I	On,Off	Off	-	-	-

White Bar Level	I	SMPTE, Full	SMPTE	System
Ext. Black Clamp	O I	0..99	50	System

MONITORING Menu

Menu text	User	Values	Default	Blocked if	File	Comments
Menu >>						
Display	O I	On,Time	Time	-	Operator	-
Menu Time	O I	5..99	10	-	Operator	
Statusbar >>						
Studio >>						
Studio	O I	On,Off	Off	-	Operator	-
Name	O I	[String]	---	-	-	-
Operator >>						
Operator	O I	On,Off	Off	-	Operator	-
Name	O I	[String]	---	-	-	-
Camera Number	O I	On,Off	Off	-	Operator	-

Other menu items listed in full in the base station users guide.