

EXT-FULLHD V2 HDMI V1.3 → RGB/Component processor Datasheet



■ EXT-FULLHD V2 brief

EXT-FULLHD V2 is a new box for all CRT projectors, RPTV, CRT monitor, LCD monitor and other displays with an analog RGB/Component input. It is an ideal product for connecting CRT projectors and other analog RGB/Component displays to digital 1080p full HD sources such as PS3, XBOX360, HD-DVD, and Blue-ray players. It has **AUTO selected Two** HDMI V1.3 input port with deep color support, and converts this to an analog RGB output. A build-in advanced Gamma adjustment circuit allows for perfect black level details creating a perfect image for your projector or display.

A gain control is used to adjust the pure white level of the image.

■ FEATURES

■ HDMI input path

- **Compliant with** HDMI 1.0, 1.1, 1.2, 1.3 ,HDCP 1.1, and DVI 1.0
- Support DTV mode (480P,576P,720P,1080i,1080P) for 50 and 60Hz
- Support PC mode VGA, SVGA, XGA, SXGA, UXGA .etc
- Support 4:4:4 RGB / YCbCr input
- Support 4:2:2 YCbCr input
- Support both 16-235 and 0-255 color range and auto select correct value
- **14bit** Data processing with High precision **230MHz 11bit** DAC
- **Advanced Gamma correction processing**
- **Black boost function**
- **Range expand function**
- High speed 1GHz output Buffer drive long cable
- Support deep color mode for **10bit** and **12bit**
- Support 120Hz for 720P and 1080i

■ Board and BOX

- **Image horizontal shift function both for RGB and Component output mode**
- **White level 0.7V peak indication at RGB output mode**
- Metal box have cleanest electrical environment for high definition content processing
- Global power supply 100V-240V
- Toslink output, support up to 8ch Audio
- Both support Dolby-True HD and DTS-HD

PRELIMINARY, SUBJECT TO CHANGE WITHOUT NOTICE

- Output sync mode support RGBHV **with sync Polarity adjust**
- **Output sync selectable to RGSB for BARCO CRT projector**
- **Manual H-PHASE Adjust by push button with 50 preset resolution memory**

Difference between EXT-FULLHD V2 and EXT-FULLHD

	EXT-FULLHD	EXT-FULLHD V2
Gamma		Improved gamma (suggested by WTS)
sharpness		More sharper image (improved suggested by MP)
Picture purity		More clean (improved suggested by MP)
Range expand		Support (0-255 and 16-235)
Stability		ESD enhanced
H-shift	1 set memory	50 preset memory both for RGB and component output mode
RGBS output		Support
Black Boost		Support
HDMI port	1	2
AUTO-input selection	No	Yes
Output Sync polarity adjust	No	Yes,
Component output mode	No	Yes

■ HDMI support mode table

Table 1

PC mode	640X480	60HZ 72HZ 75HZ 85HZ
	800X600	56HZ 60HZ 72HZ 75HZ 85HZ
	1024X768	43HZ 60HZ 70HZ 75HZ 85HZ
	1152X864	60HZ 70HZ 75HZ 85HZ
	1280X1024	43HZ 60HZ 75HZ 85HZ
	1600X1200	48HZ 60HZ
	1440X960	43HZ 60HZ 72HZ
HDTV mode	480P	60HZ
	576P	50HZ
	720P	50HZ 59HZ 60Hz 120Hz
	1080I	29HZ 30HZ 50HZ 59HZ 60HZ 96HZ^{*1} 120Hz
	1080P	50HZ 59HZ 60Hz 24HZ^{*2} 25HZ^{*2} 29.9HZ^{*2} 30HZ^{*2}
	1035I	30HZ

【Notice】 :

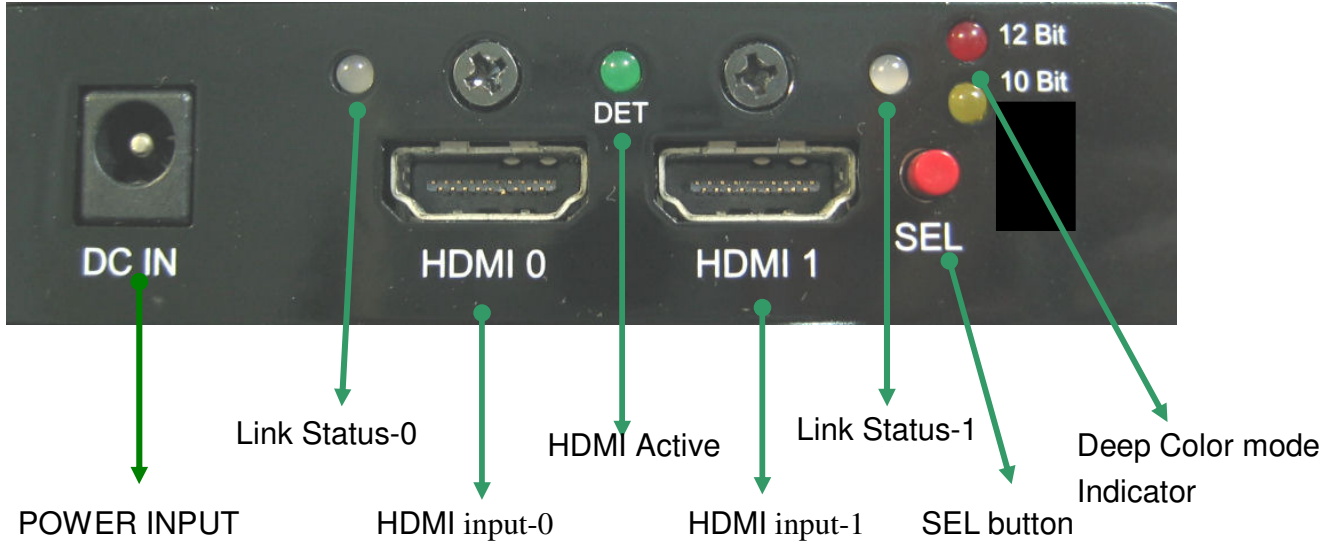
*1 need use powerstrip to set graphic card output this mode

***2 EXT-FULLHD V2 support these modes, and will output these signal with same refresh rate as same as input source, but most CRT projector are only support 30Hz-150Hz, using such low refresh rate may let projector working with incorrect behavior.**

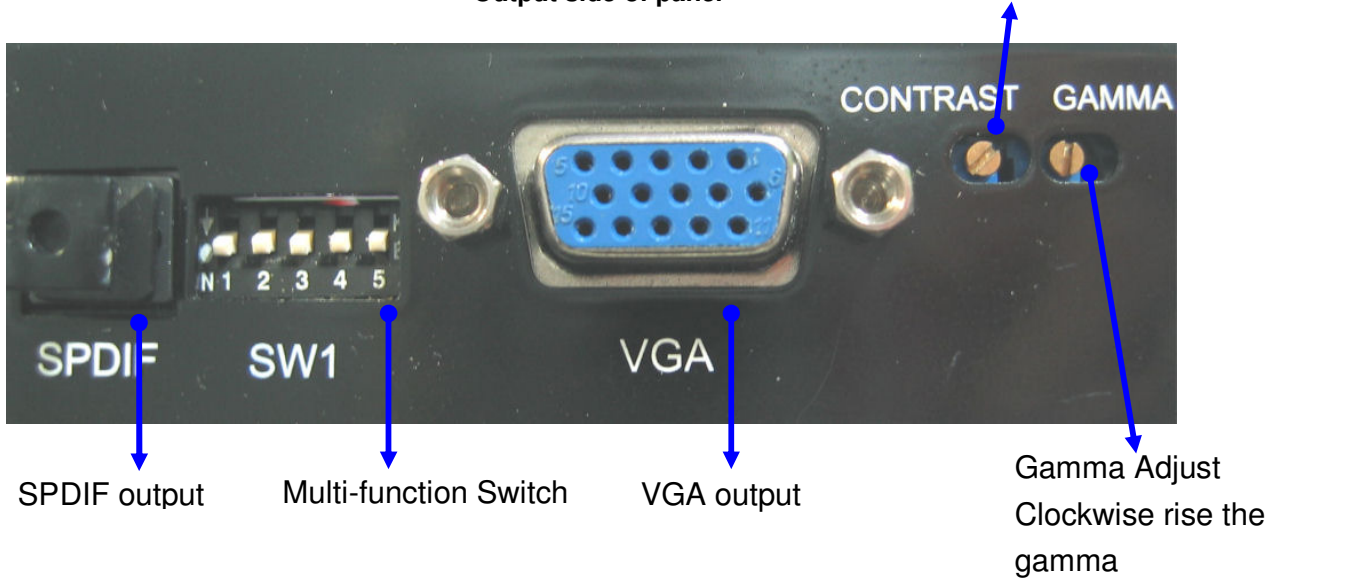
3. when set component output mode, only HDTV mode support (50Hz, 60Hz)

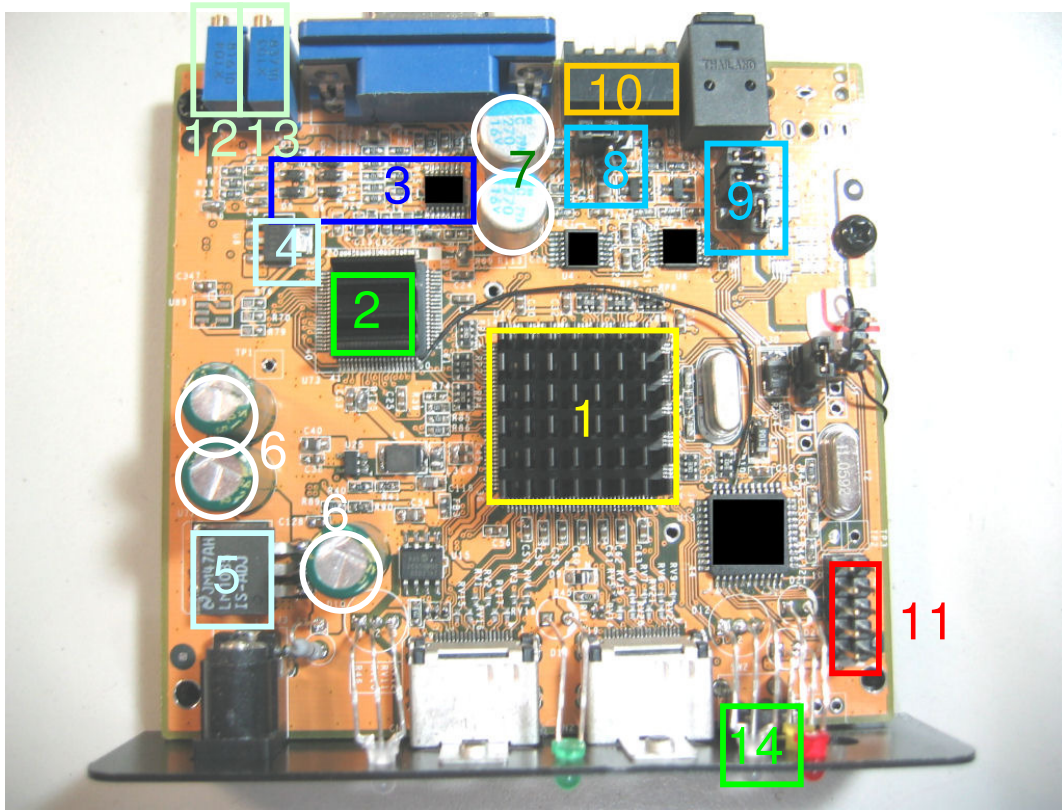
■ Box overview

Input side of Panel



Output side of panel





Board introduction:

1. HDMI 1.3 main chip, support 12bit deep color, 14bit data processing
2. High precision 11Bit 230MHz Video DAC
3. High band width Video amplifier and improved gamma circuit
4. Low noise linear regulator
5. Low noise and high precision linear regulator for whole system
6. Low ESR capacitor
7. Ultra Low ESR capacitor for Video amplifier
8. Output sync type selection jumper
9. Output H, V sync polarity selection jumper
10. Multi-function Switch-- SW1
11. Firmware upgrade port
12. Gamma adjust Pot
13. Contrast adjust Pot
14. Push button

HDMI input ports:

Connect HDMI cable to video source

SPDIF port (Toslink):

Optical digital sound output, support 2ch PCM and 8ch compressed sound

DC connector:

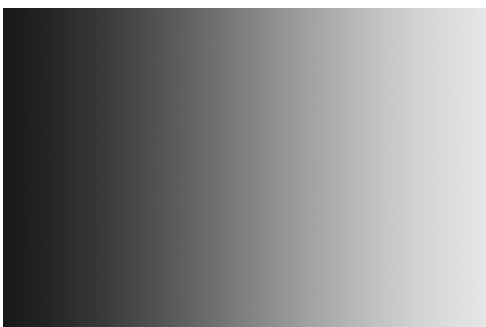
Connect to AC adaptor

First Time setting

1. please connect DVD player and EXT-FULLHD V2 with HDMI cable
2. please use VGA→RGBHV cable to connect to projector or monitor
3. plug in DC power, the image should be appeared

【Notice】 : if no image show up , please adjust SW1 #5 dip switch to K side , #4 dip switch to E side , then press SEL button until you get stable image ◦ (for some BARCO model, negative sync may needed, please take a look for sync polarity adjustment section), if you can not get the box work, please email us.

■ Adjust gamma (clockwise to increase gamma)



【Notice】 :

- 1. Too large gamma will let black level saturate and get washed out image, please use grayscale pattern to adjust correct gamma
- 2. Gamma function will be disabled at component output mode

PRELIMINARY, SUBJECT TO CHANGE WITHOUT NOTICE

■ Adjust contrast (clockwise to increase contrast)



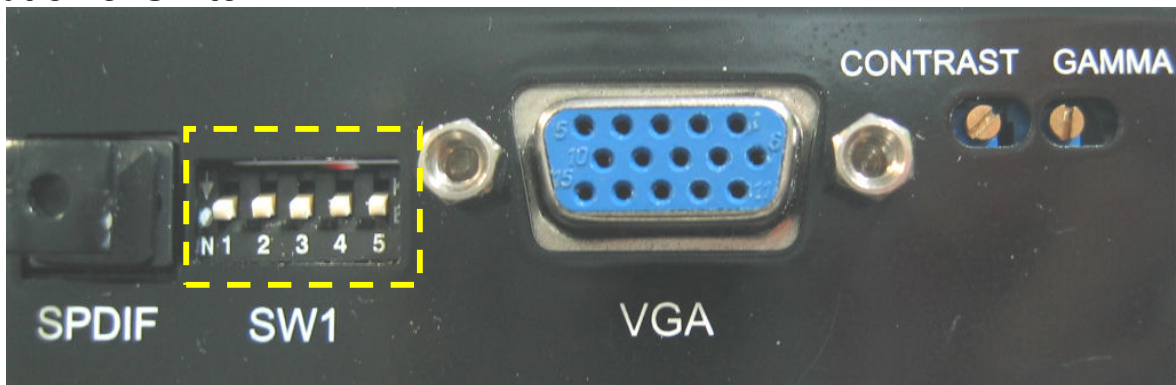
【Notice】 : Too large contrast will let image white level saturate, only do this when you have instrument to measure the output white level. (Factory default is 0.7V with gamma off)

PRELIMINARY, SUBJECT TO CHANGE WITHOUT NOTICE

Multi Function Switch:

#1	Black Boost		
#2	RGB/Component		
#3	Range expand		
#4	Reset/input SEL		
#5	H-shift/input SEL		

Location of Switch:



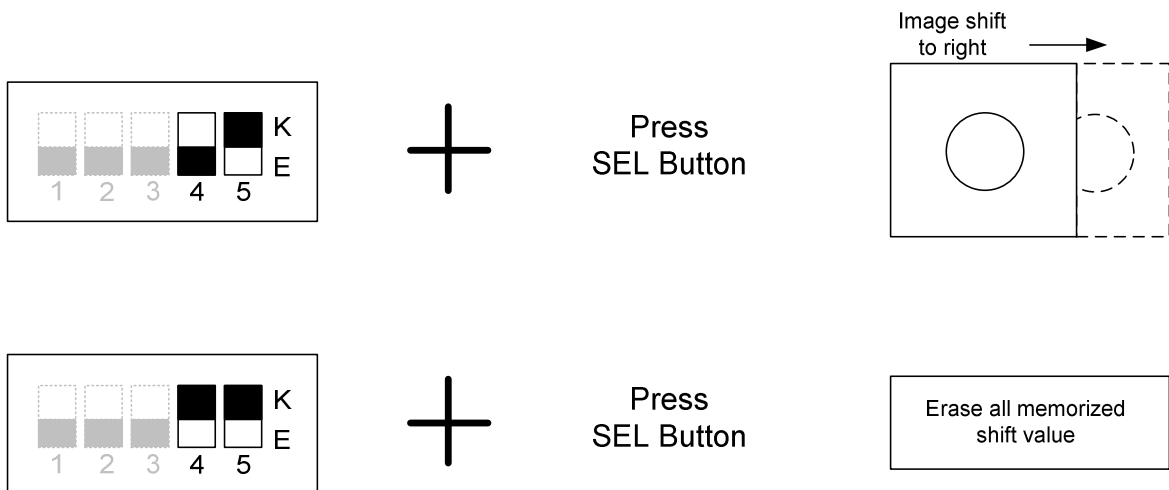
Location of SEL button



H-PHASE ADJUST: (professional only)

【Step】 : (Professional only)

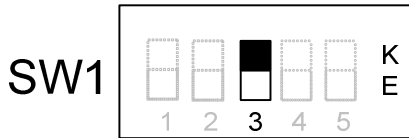
1. Set SW1 #5 at “K” side , #4 at “E” side
2. Press SEL button, you will see the image shift to right, and 10bit LED will blinking
3. if input resolution changed, like move from 1080P to 720P, please do the step 1, step 2 again
4. shift value will be memorized for each factory defined resolution (list in table 1, for HDTV, support 50Hz and 60Hz only)



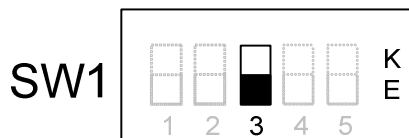
【Notice】 :

1. When the image shift to the right limit, the 10bit LED will keep on when press SEL button, **keep press SEL button for more then 2 second, image will go to the original left side.**
2. Shift value will store in memory for each factory default resolution when power off, and shift value will be loaded at next power on
3. When set on component output mode, the shift will **at opposite** direction

Range Expand control:



**Range Expand on
Output=0-255**

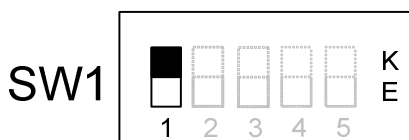


**Range Expand off
Output=16-235**

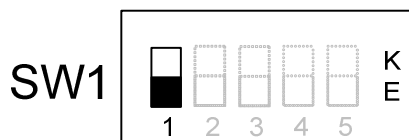
【Notice】 :1. When set range expand on, you will not able to see any BTB and WTW, but most video content will contain no data in BTB and WTW, set this will enhance total picture dynamic range

2. When input is RGB 0-255 mode, please turn off this function

Black Boost control:



Black boost on

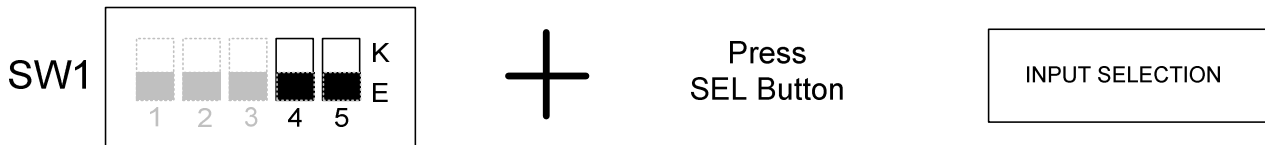


Black boost off

Black Boost can help CRT user to get more detail in black without adjust too much brightness on CRT

AUTO INPUT DETECTION

When no HDMI plug in, the EXT-FULLHD V2 will auto switch between two port until it receive valid HDMI signal. If both inputs have valid HDMI signal, User can set SW1 #4 at “E”, #5 at “E”, and then press SEL button to select the input source



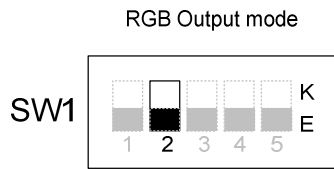
【Notice】 : Input selection only works when both HDMI inputs are valid

Peak White Detection

When you set EXT-FULLHD V2 at RGB output mode, there is a block will detect output white level Automatically, if output white level over 0.7V, the 10BIT LED will keep flashing to indicate too much contrast, you can turn contrast pot un-clockwise to lower the white peak level.

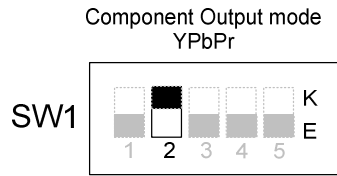
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Output mode setting (RGBHV, RGBS)



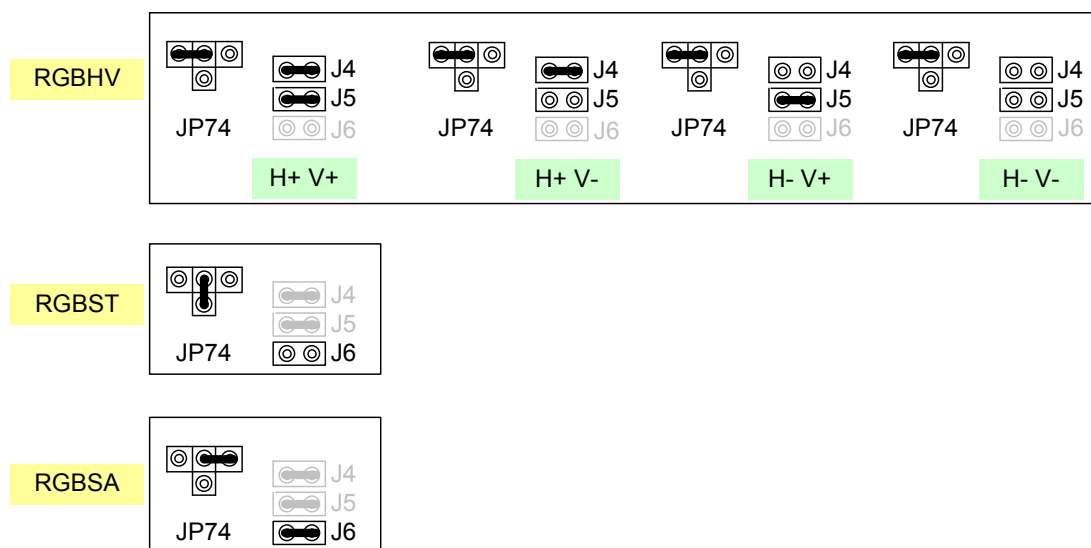
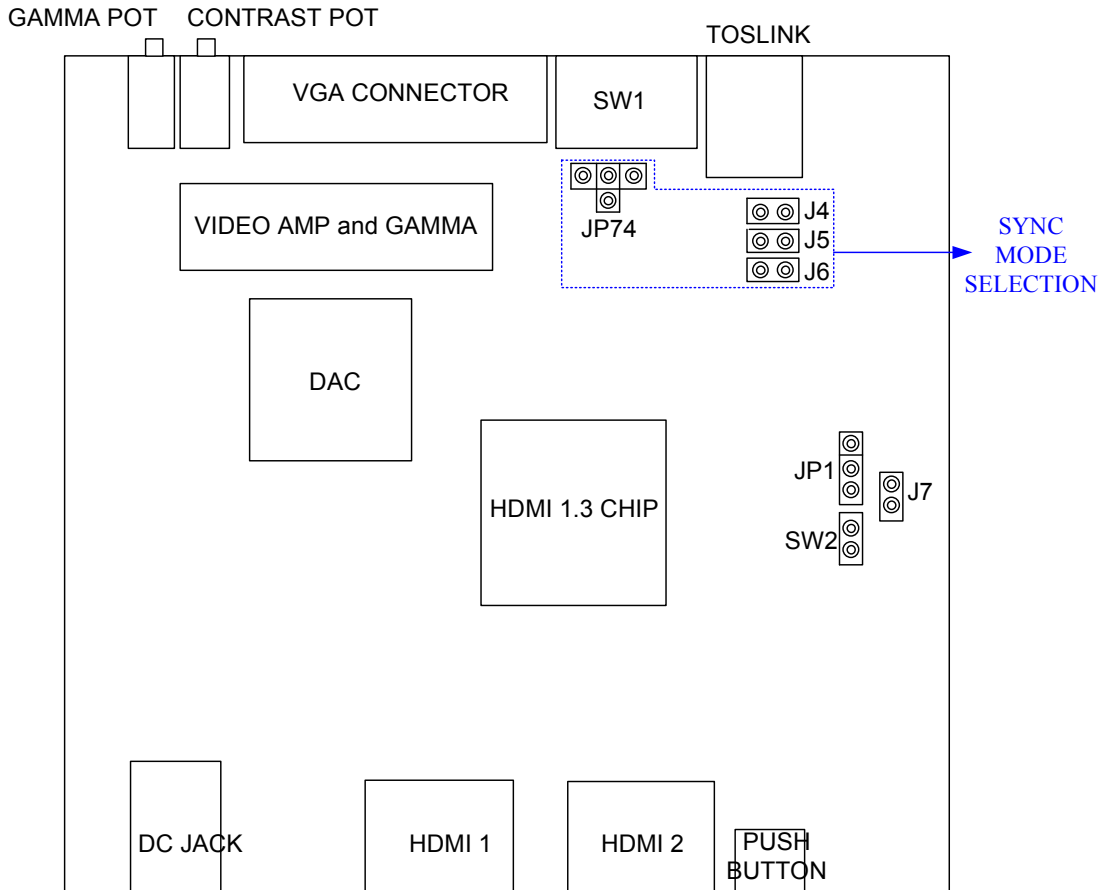
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Output mode setting (YPbPr)



PRELIMINARY, SUBJECT TO CHANGE WITHOUT NOTICE

OUTPUT Sync mode selection:



Recommend output sync mode for different display:

RGBHV: for most CRT Monitor, LCD Monitor, SONY VPH series projector,

NEC PG projector, NEC XG projector, BARCO 808 1209 909 projector (need negative sync)

RGBST(A): for BARCO 70X CRT projector, BARCO 801 CRT projector

Tested HDMI V1.3A Players :

1. Toshiba XA2 HD-DVD player
2. Sony PS3
3. Panasonic BD30A Blue-ray player
4. SONY S360 Blue-ray player
5. LG Blue-ray player
6. Samsung Blue-ray player
7. Philips Blue-ray player

EXT-FULLHD V2 Spec:

Weight: 270g

Dimension: 100mmX100mmX30mm

Power consumption: 3W +5V 0.6A (1080P 60Hz)

Maxima resolution: 1920X1200 72Hz

Analog bandwidth: 1000MHz

HDMI cable length support: >30M

Output white level: 0.6V-1.0V adjustable

Output mode: RGB, Component YPbPr

Sync signal: H+ V+, H+ V-, H- V+, H- V-,
, Composite sync (TTL level or 1V)

Technical support:

moome@curtpalme.com

Warranty:

Fully 2 year