User Manual


AVMATRIX
12G SIGNAL GENERATOR
Cpu : 49.58 °C
10:52:48
OK
EXIT
Pattern
Mode
Audio
Option
System
Fn

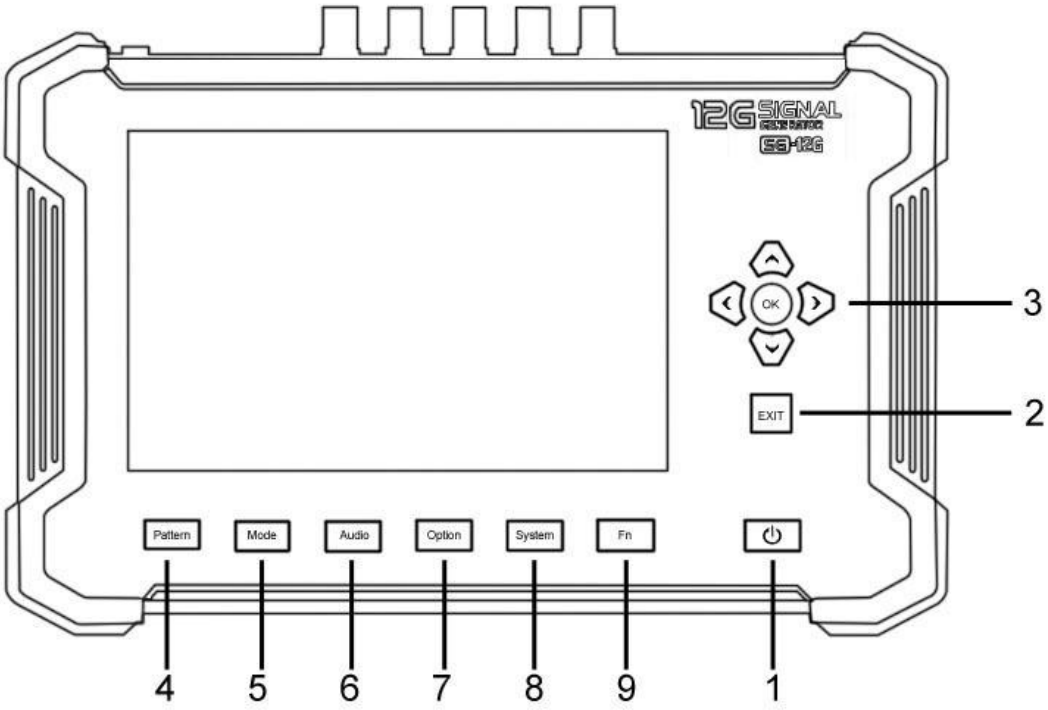
IMPORTANT SAFETY INSTRUCTIONS:

1. Please do not place the display screen towards the ground to avoid scratching the LCD surface.
2. Please avoid heavy impact.
3. Please do not use chemical solutions to clean the device. Simply wipe with a clean soft cloth to maintain the brightness of the surface.
4. Please do not block any vent hole.
5. Please unplug the power and remove the battery if long-term no-use, or thunder weather.
6. Internal adjustments or repairs must be performed by a qualified technician.
7. Do not place equipment or accessories with other flammable liquids, gases, or other explosives to avoid danger.

CONTENTS

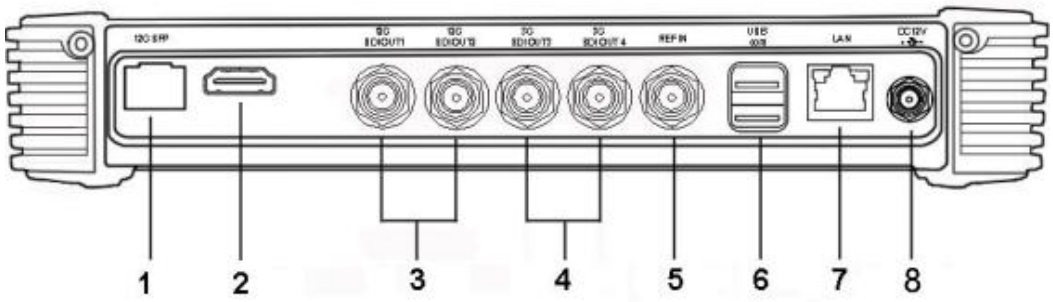
1. PRODUCTION DESCRIPTION

1.1. FRONT PANEL FEATURES



1. Power.
2. Exit: To return or exit.
3. Direction and OK key
4. Pattern key
5. Mode key
6. Audio key
7. Option key
8. System key
9. Fn key: Shortcut key

1.2. TOP PANEL FEATURES



1. 12G SFP Port
2. HDMI port
3. 12G SDI Output interface
4. 3G SDI Output interface
5. REF IN interface
6. USB and COM Port
7. LAN Port
8. DC 12V power input

2. OPERATION

2.1. GETTING START

2-1-1. Plug the power supply into the DC power input on the top panel. Long press power key to turn the device on. The device built in 5000mAh battery with about 2 hours working time.

2-1-2. Connect the generator to the device needs to be tested using a standard SDI cable. It supports 2xSDI outputs up to 12G and 2xSDI outputs up to 3G-SDI.

2-1-3. Use standard HDMI cable to connect this device with the equipment to be tested. The device supports up to HDMI signal 4096×2160 60Hz.

2-1-4. This device supports using mouse to easy operation.

2.2. MENU OPERATIONS

This device supports two types of operations:

2-2-1. KEYPAD OPERATION

Press the function option (PATTERN/MODE/AUDIO/OPTION/

SYSTEM/Fn) keys on the front panel, then press direction key to choose the needed option, press OK key to pop up the pull-down menu, press UP/DOWN direction key to choose and OK key to confirm. Press EXIT to exit the menu.

While input the value, press UP/DOWN direction key to choose the input box, then press OK key to pop up the input cursor, press direction key to choose digits on the displayed keyboard, and press OK key to confirm. Select "<" and press OK to delete the digits. Press EXIT key to exit the input.

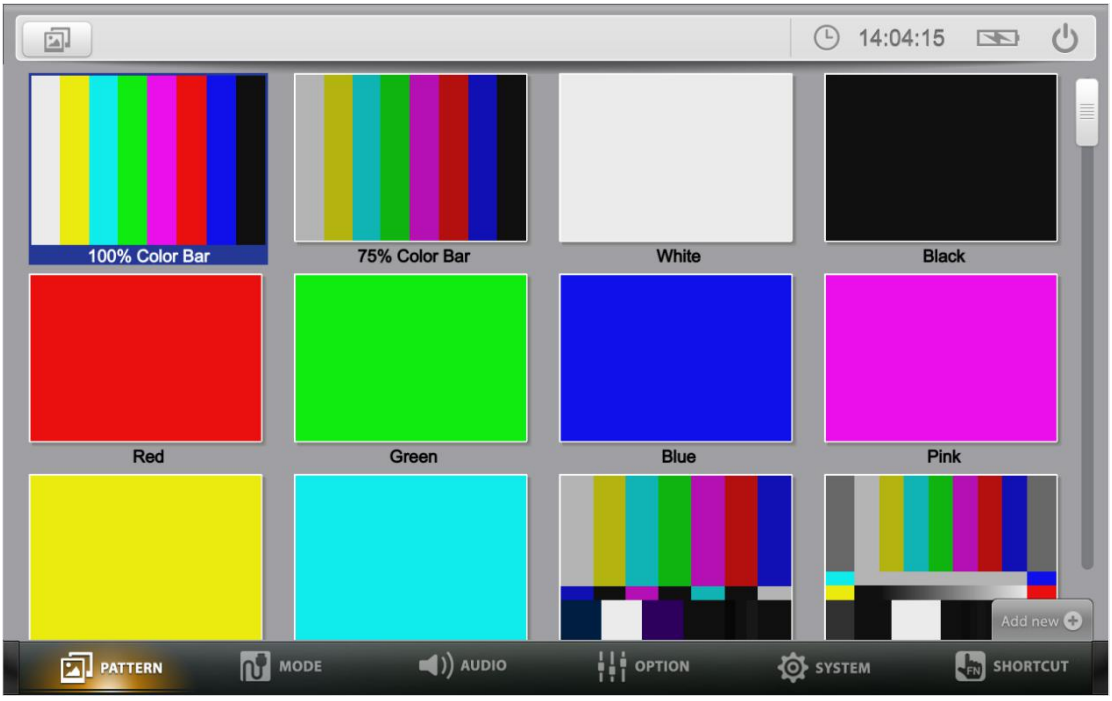
2.3. MOUSE OPERATION

Left click the function option (PATERN/MODE/AUDIO/OPTION/SYSTEM/Fn) on the bottom of screen. Left click the option to pop up pull-down menu, move the mouse to choose and left click to confirm.

While input the value, left click the input box to pop up the input cursor, move the mouse to the digital keyboard on the screen, then left click to choose the digits. Left click "<" to delete the digits.

3. FUNCTIONS SUMMARY

3.1. PATTERN



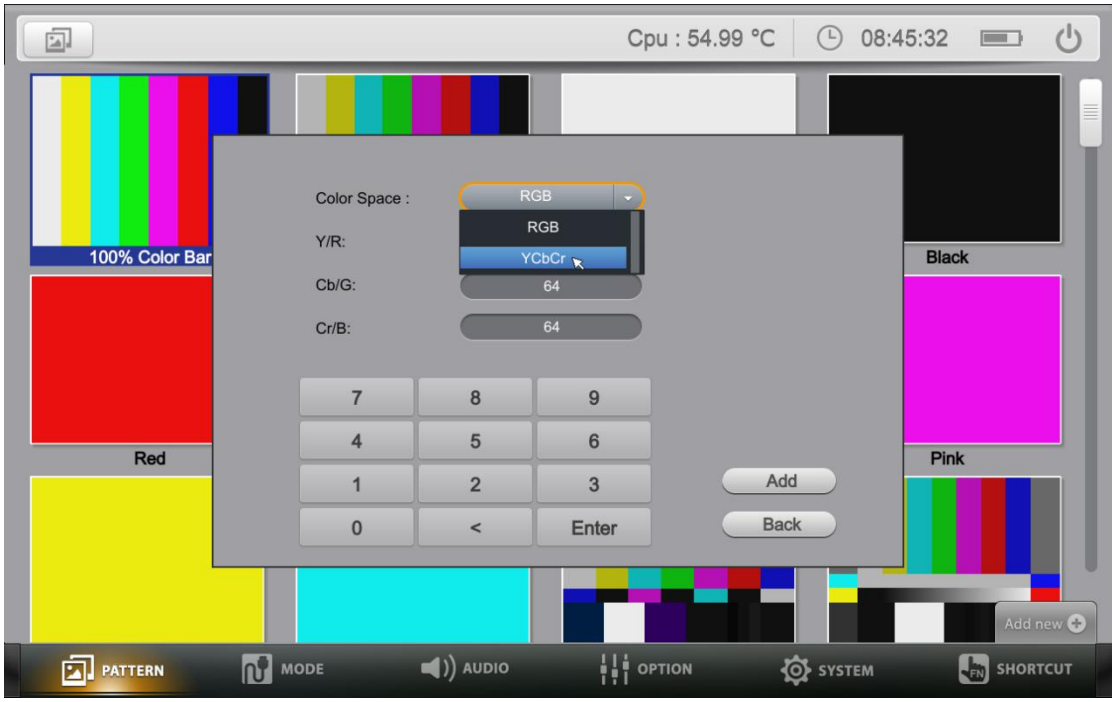
The PATTERN built-in a plenty of preset patterns, and user-definable imported to the generator to meet various test requirements. It can be performed with the mouse or the keys to the following operations: (Refers to Appendix 1)

3.1.1 Switch output pattern

- Press the direction keys to choose the pattern, then press OK key to conform.
- Move the mouse to the pattern, then double left click or right click to select apply.

3.1.2 Add the pattern (Built-in pattern supports customization.)

- The device supports to add the pattern via USB interface. Plug the USB flash disk, then click the "add new" icon on the right corner of the screen to add the pattern. To add the built-in pattern, please contact with the Service.
- Support to create User Color Picture base on RGB and YCbCr



- Click "Add New"->"Custom" by using mouse, or press the Down key to go to the bottom of Pattern interface, then press Left or Right Keys to activate the setting interface.
- Select Color Space to choose RGB or YCbCr and the relevant parameters according to the requirement. Click or press "Add" to add this new pattern to the system.

3.1.3 Delete the pattern (Built-in pattern can't be deleted.)

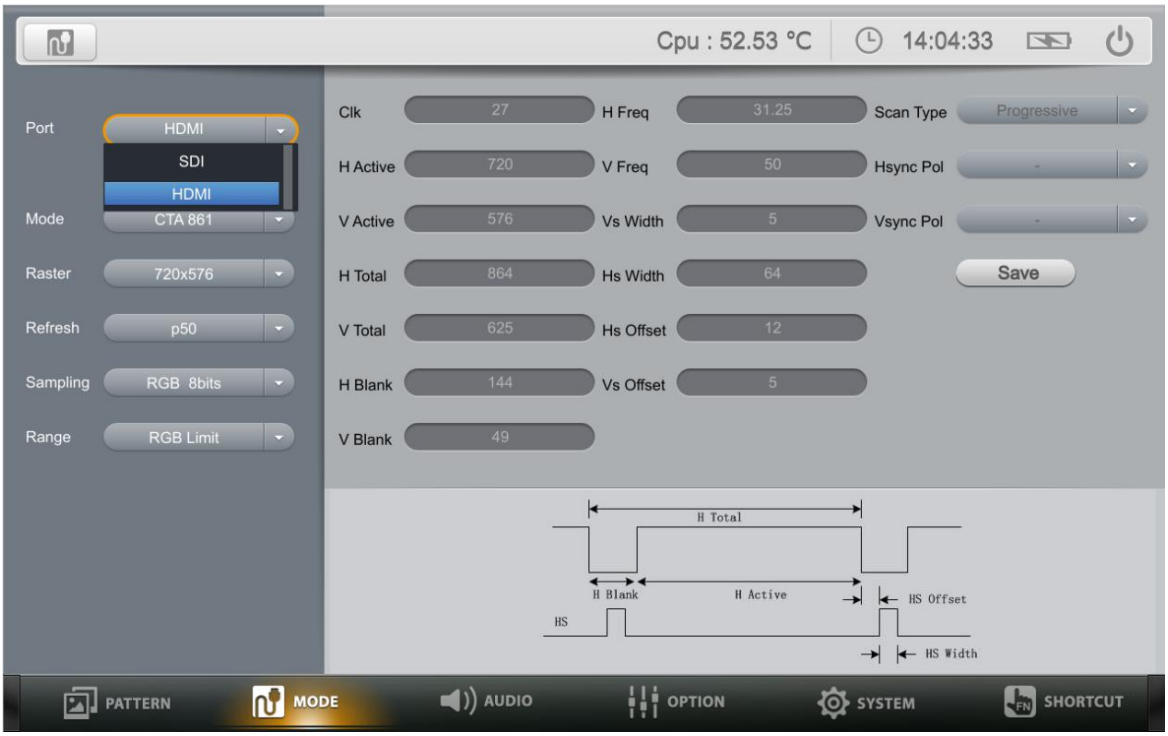
- Press the direction keys to choose the pattern, press Exit key, then select OK key on the pop-up window to delete the pattern.
- Move the mouse to the pattern, right click to select delete.

3.1.4 The device built-in various kinds of patterns to meet various test

requirements:

- Color bar series can be used to check if the color is displayed normally, and whether the image has cross-color interference.
- Purity series are often used to check color purity. When using the Red pattern, no other color should be present on the screen. If the Red pattern appears tinted, then this is an indication that the color purity should be adjusted. The Red pattern can also be used to ensure that there is no interference between the sound and the chroma carrier, in addition to adjusting the long play delay level to minimum flicker.
- Black is often used to test whether the screen has bright spots and whether there is light leakage.
- Blue is a complementary color. It is frequently used to test color performance.
- Gray Scale series can be used to locate faulty linearity of the video amplifier or gray scale setting.
- Grid series and cross patch patterns are mainly used for detecting corner convergence.
- Gradient serious are used to detect linearity faults in the video amplifier. Non-linearities will usually result in color level compression.

3.2. MODE



Mode interface supports switch the timing of output signal by using the keys or the mouse. And the related information of the signal output currently can be

checked on the bottom of screen. (Timing sheet refers to Appendix 1)

Port Options

SDI or HDMI mode for optional.

Mode Options

SDI supports selecting among of 12G-SDI / 6G-SDI / SG-SDI / HD-SDI / SD-SDI signal formats.

HDMI supports selecting among of VESA / CTA861 / User Timing mode.

Raster Options

Select different resolutions options corresponding to different Modes.

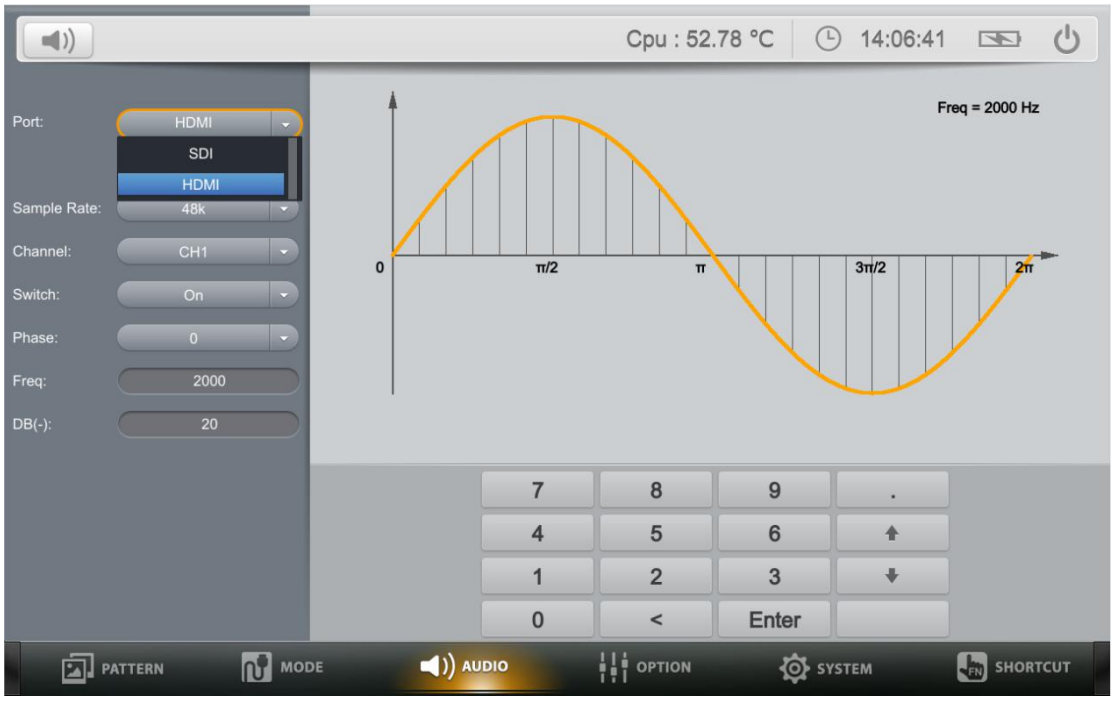
Refresh Options

Select different raster rates corresponding to different Modes & Raster.

Sampling Options

Select different GBR & YCbCr sampling rates based on the above options.

3.3. AUDIO



A comprehensive audio monitoring tool supports up to 16 channels embedded AES/EBU audio, with -60dB to 0dB range, And a 20Hz to 20000Hz frequency.

Port Options

Select the signal source to be adjusted. Option: HDMI or SDI.

Sample Rate Options

Audio sample rate default as 48k under SDI mode.
Audio sample rate under HDMI mode. 32k, 44.1k, 48k, 64k, 66.15k, 72k, 88.2k, 96k, 132.3k, 144k or 192k for optional.

Channel Options

HDMI: 8 audio channels, ranges from CH1 to CH8.
SDI: 16 audio channels, ranges from CH1 to CH16.

Switch Options

Off/On/All off /All on option for 16-channel audio switch.

Phase

Selects phase among 0, 90, 180 and 270.

Freq

Freq options can be customized from 20Hz to 20000Hz by users.

DB (-) Options

Freq options can be customized from -60bB to 0dB by users.

3.4. OPTION

For solutions with various applications, the "Option" of device offers Overlay, image moving control and Ref In functions for users to analyze different signals and formats.

3.4.1 Overlay

3.4.1.1 The device supports three types of Overlay:

Ring Type

Frame Counter Type

Character Type

Note: Text input will be displayed based on the specific X and Y that can be preset in Pos-X/Y options. User can input the customized text in the

3.4.1.2 Moving

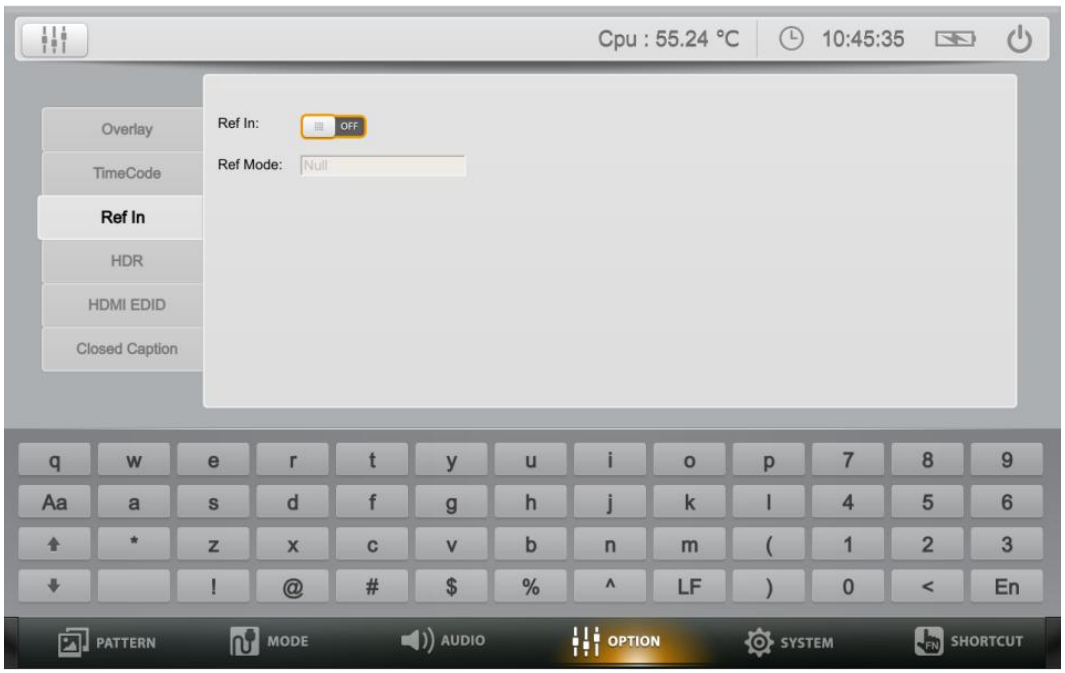
The moving of 3 types can be customized with 4 directions and preferred steps. User can input the step value in the step input box.

3.4.2 Time Code

The device support linear time code (LTC), vertical interval time code (VITC) and LTC&VITC. The user can adjust the value in setting input box.

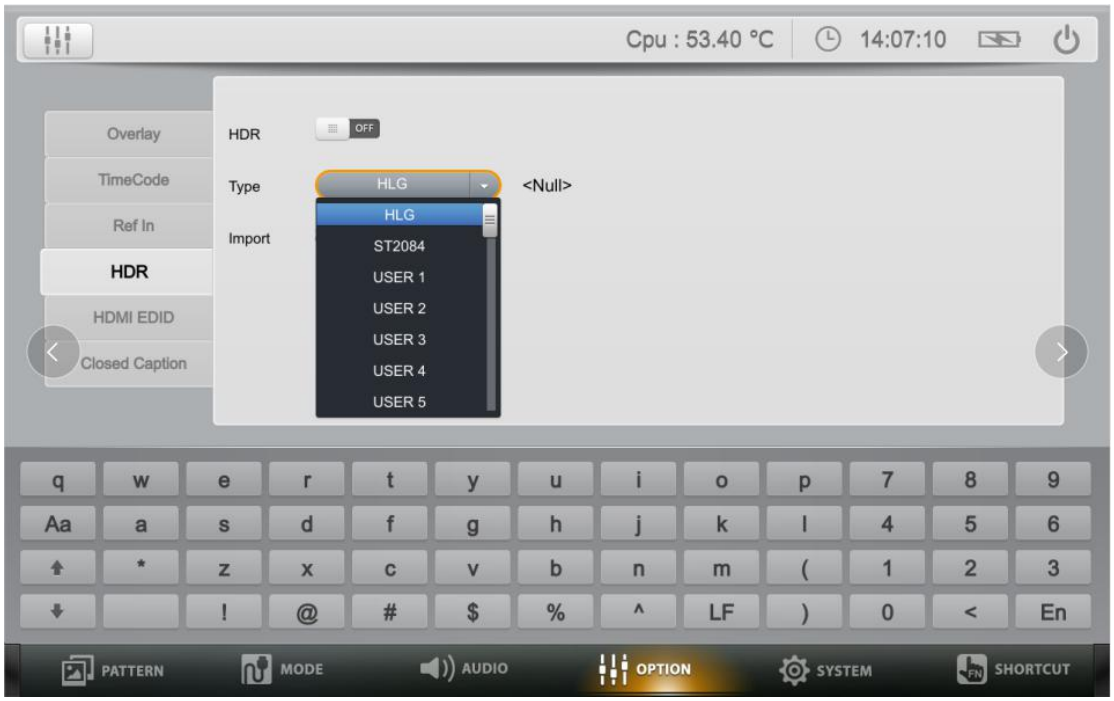
3.4.3 Ref In

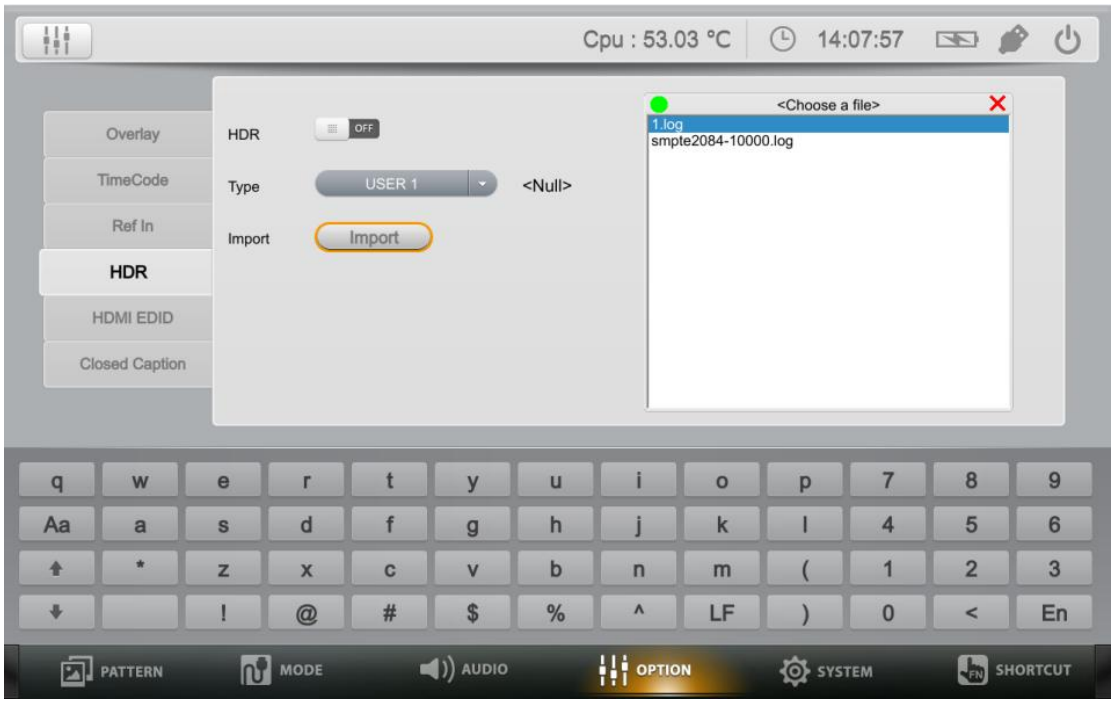
Ref In used for frame synchronization to ensure input & Ref mode display.



3.4.4 HDR

- Turns HDR type import ON/OFF.
- System built-in HLG and SMPTE 2084-10000 HDR standards.
- Users can load HDR files via USB flash disk.

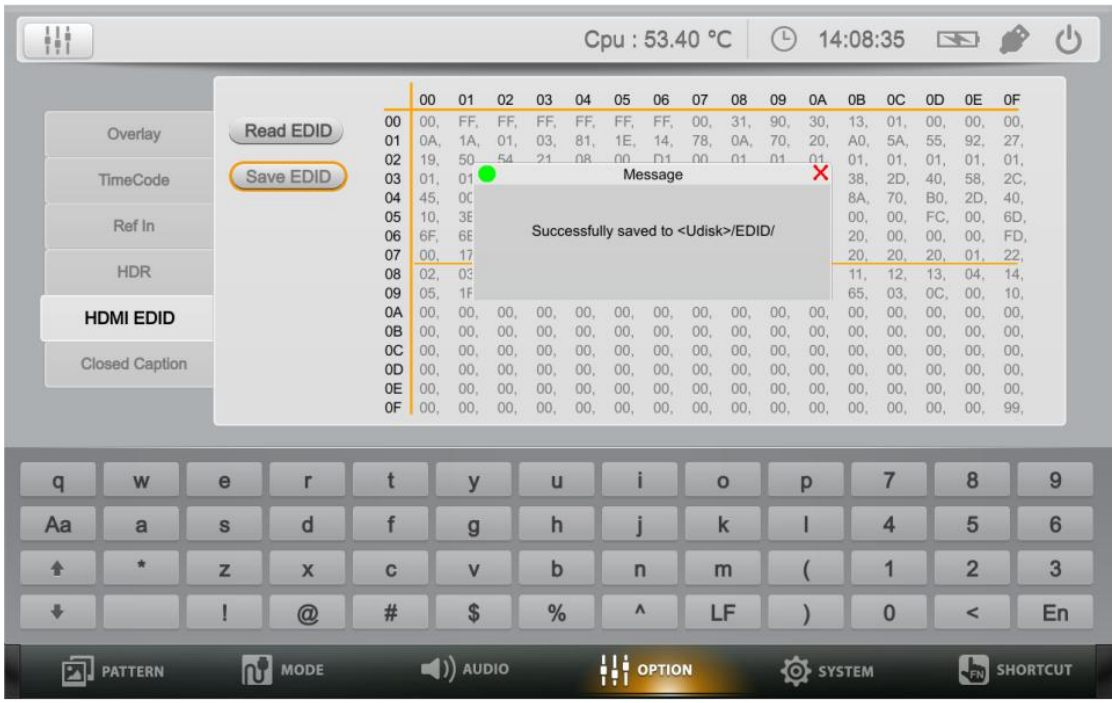




3.4.5 HDMI EDID

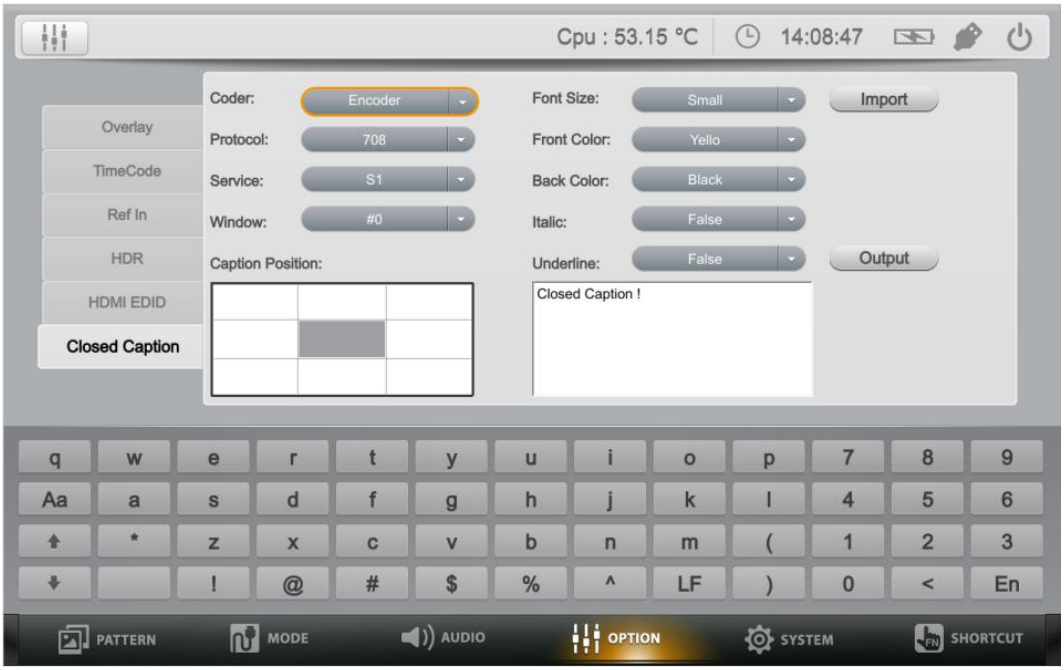
- Connects HDMI device with HDMI cable, click “Read EDID” to read the EDID data of the display device.

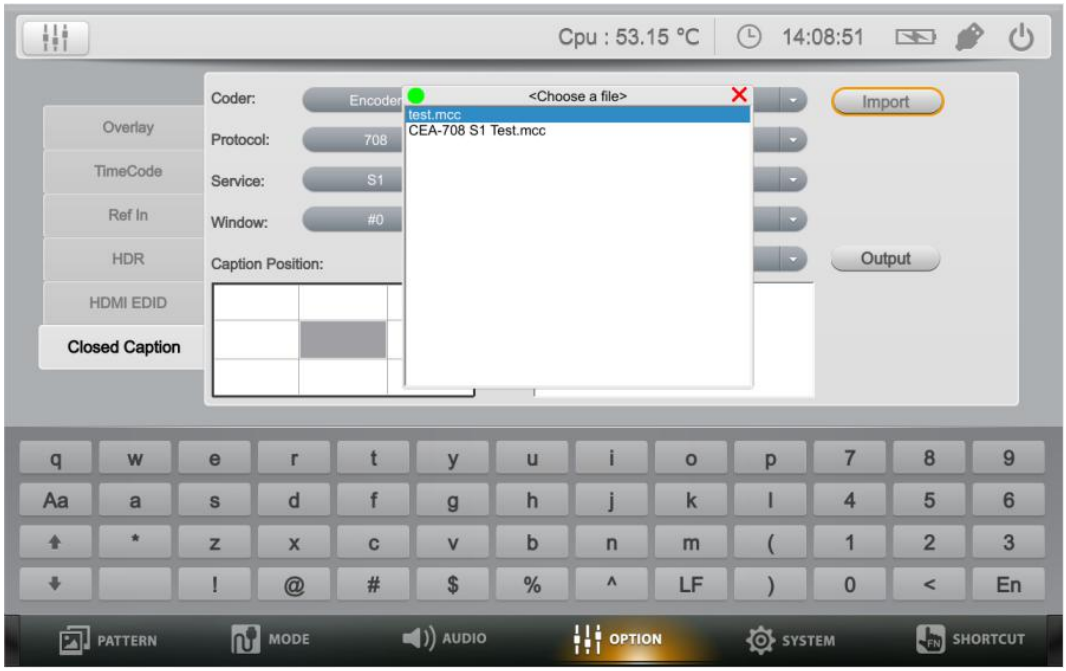
- Plug USB flash disk into the signal generator, click “Save EDID” to save the current EDID data to an assigned path of USB flash disk.



3.4.6 Closed Caption

- SDI embedding Closed Caption function control.
- Configurate the Closed Caption control interface and output the corresponding Closed Caption.
- Uploading mcc file to analyze and automatically display the Closed Caption on the file timeline.





3.5. System

System function Supports to review the firmware version of device and settings of Brightness, Fan, Language, Time and Night Mode. User can reset the device system settings under this option.

Brightness

Press the UP/DOWN key on the front panel to adjust the brightness. If in the bright conditions, increase the LCD brightness to make it easier to view.

Fan

This setting is to turn the fan on or off. If select automatic option, the device will automatically turns the fan on or off according to the usage and external temperature.

Language

Supports English language, other languages can be customized.

Time setting

User can set up the system time according to the locate time zone.

Night Mode

Activate the Night Mode, it will automatically adjust the proper brightness in insufficient light.

Update

Update the system of the device.

Reset

Restore the factory default Settings.

3.6. Fn

User-definable functions as shortcuts with great convenience. It supports more than one hundred shortcut functions. For time-saving and high efficient operation when testing, users can manage shortcut functions through Add, Del, Replace and Output operations.

Add

Select "Add" to record the last output signal to be a shortcut.

Del

Select Del to delete the shortcut.

Replace

Select replace, the last output signal will replace the original one.

Output

Select Output to output the shortcut signal easily.

4. ACCESSORIES

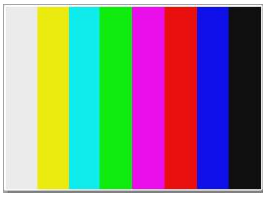
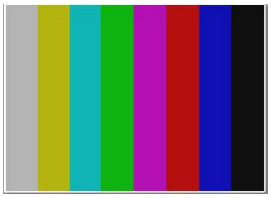
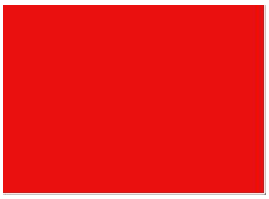
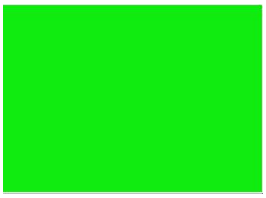
- Carry-on box 1pc
- 12V 3A power adapter 1pc

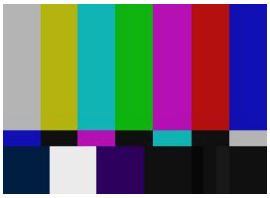
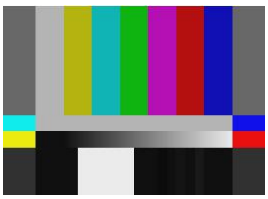
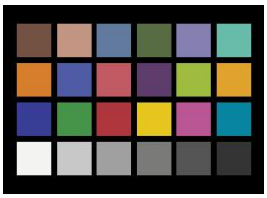
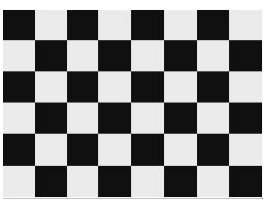
5. PARAMETER

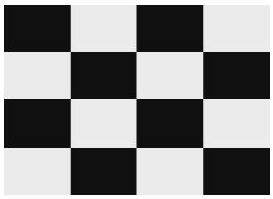
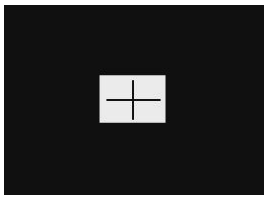
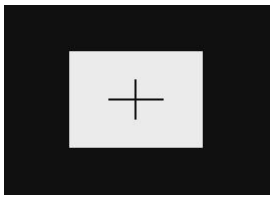
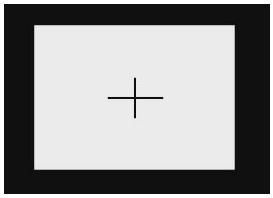
5.1. Specifications

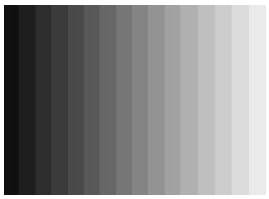
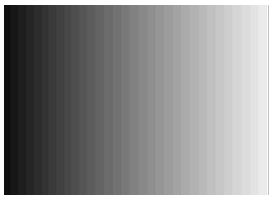
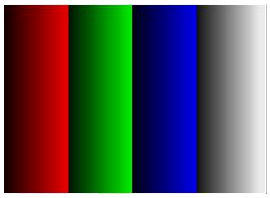
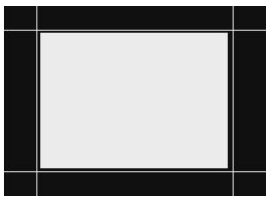
DISPLAY	Display Screen	7” IPS
	Physical Resolution	1280x800
	Aspect Ratio	16:10
	Brightness	400cd/m²
	Contrast	800:1
	Viewing Angle	178°/178°(H/V)
INPUT	REF	1
	USB	2
OUTPUT	12G-SDI	2
	3G-SDI	2
	HDMI 2.0	1
	FIBER	1
POWER	Current	≤2.3 (12V)
	Input Voltage	DC10-15V
	Power Consumption	≤27W
	Built-in Battery	5000mAh
ENVIRONMENT	Operation Temperature	-20°C~40°C (Minimum battery-10°C)
	Storage Temperature	-30°C~70°C
DIMENSION	Dimension (LWD)	264x169x42mm
	Weight	3KG

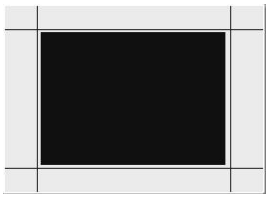
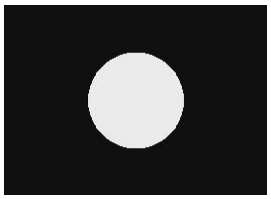
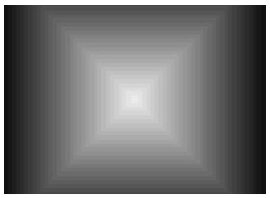
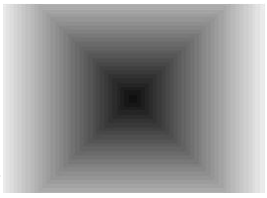
5.2. Appendix 1

No.	Description	
P1	100% Color Bar	
P2	75% Color Bar	
P3	White	
P4	Black	
P5	Red	
P6	Green	
P7	Blue	

P8	Pink	
P9	Yello	
P10	Cyan	
P11	Smpte Color Bar	
P12	Smpte RP 219	
P13	Color Check	
P14	SDI Checkfield	
P15	8x6 Check	

P16	4x4 Check	
P17	25% Window	
P18	50% Window	
P19	75% Window	
P20	Red Ramp	
P21	Green Ramp	
P22	Blue Ramp	
P23	White Ramp	

P24	Black Ramp	
P25	16 Step Ramp	
P26	32 Step Ramp	
P27	RGB Ramp	
P28	DLP Mirror White Box	
P29	DLP Mirror 2 Luminance	
P30	DLP Mirror Slash Zone	
P31	Static Regulation	

P32	Static Regulation 2	
P33	User DTV White Balance	
P34	Diagonal 32 Ramp	
P35	Reverse Diagonal 32 Ramp	r 
P36	Border Line	
P?	Customized	Customized according to requirements

5.3. Appendix 2

SDI Input Signal	Signal Format	Color Space
SD	720x525(59.94i)	YCbCr 4:2:2 10bits
	720x625(50i)	YCbCr 4:2:2 10bits
HD (1920x720)	1280x720 (50p/59.94p/60p/23.98p/24p/25p/29.97p/30p)	YCbCr 4:2:2 10bits
HD (1920x1080)	1920x1080/2048x1080 (50i/59.94i/60i/23.98P/24p/25p/	YCbCr 4:2:2 10bits

(2048x1080)	29.97p/30p) (23.98sf/24sf/25sf/29.97sf/30sf)	
3G Level A (1280x720)	1280x720 (50p/59.94p/60p/23.98p/24p/25p/29.97p/30p)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits
		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits
		YCbCr 422 12bits
3G Level A (1920x1080) (2048x1080)	1920x1080/2048x1080 (47.95p/48p/50p/59.94p/60p)	YCbCr 4:2:2 10bits
	1920x1080/2048x1080 (23.98p/24p/25p/29.97p/30p/47.95i/48i/50i/59.94i/60i) (23.98sf/24sf/25sf/29.97sf/30sf)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits
		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits
		YCbCr 422 12bits
3G Level B_DL (1920x1080) (2048x1080)	1920x1080/2048x1080 (47.95p/48p/50p/59.94p/60p)	YCbCr 4:2:2 10bits
	1920x1080/2048x1080 ((23.98p/24p/25p/29.97p/30p/47.95i/48i/50i/59.94i/60i) (23.98sf/24sf/25sf/29.97sf/30sf)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits
		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits
		YCbCr 4:2:2 12bits
3G Level B_DS (1920x1080)	1920x1080/2048x1080 (50i/59.94i/60i/23.98P/24p/25p/	YCbCr 4:2:2 10bits

(2048x1080)	29.97p/30p) (23.98sf/24sf/25sf/29.97sf/30sf)	
3G Level B_DS (1280x720)	1280x720 (50p/59.94p/60p/23.98p/24p/25p/29.97p/30p)	YCbCr 4:2:2 10bits
DL_3G_B_4K_2SI (3840x2160) (4096x2160)	3840x2160/4096x2160 (23.98p/24p/25p/29.97p/30p)	YCbCr 4:2:2 10bits
QL_HD_4K_SQ_B.1 (3840x2160) (4096x2160)	3840x2160/4096x2160 (23.98p/24p/25p/29.97p/30p)	YCbCr 4:2:2 10bits
DL_3G_4K_SQ_B.2 (3840x2160) (4096x2160)	3840x2160/4096x2160 (23.98p/24p/25p/29.97p/30p)	YCbCr 4:2:2 10bits
QL_3G_A_4K_SQ (3840x2160) (4096x2160)	3840x2160/4096x2160 (47.95p/48p/50p/59.94p/60p)	YCbCr 4:2:2 10bits
	3840x2160 /4096x2160 (23.98p/24p/25p/29.97p/30p)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits
		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits
		YCbCr 4:2:2 12bits
QL_3G_B_4K_SQ (3840x2160)	3840x2160/4096x2160 (47.95p/48p/50p/59.94p/60p)	YCbCr 4:2:2 10bit
	3840x2160 /4096x2160 (23.98p/24p/25p/29.97p/30p)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits

(4096x2160)		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits
		YCbCr 4:2:2 12bits
QL_3G_A_4K_2SI (3840x2160) (4096x2160)	3840x2160/4096x2160 (47.95p/48p/50p/59.94p/60p)	YCbCr 4:2:2 10bit
	3840x2160 /4096x2160 (23.98p/24p/25p/29.97p/30p)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits
		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits
		YCbCr 4:2:2 12bits
QL_3G_B_4K_2SI (3840x2160) (4096x2160)	3840x2160/4096x2160 (47.95p/48p/50p/59.94p/60p)	YCbCr 4:2:2 10bit
	3840x2160 /4096x2160 (23.98p/24p/25p/29.97p/30p)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits
		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits
		YCbCr 4:2:2 12bits
6G ST2081-10 Mode2 (1920X1080) (2048X1080)	1920x1080/2048x1080 (47.95p/48p/50p/59.94p/60p)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits
		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits

		YCbCr 4:2:2 12bits
6G ST2081-10 Mode1 (3840x2160) (4096x2160)	3840x2160 /4096x2160 (23.98p/24p/25p/29.97p/30p)	YCbCr 4:2:2 10bits
12G ST2082-10 Mode1 (3840x2160) (4096x2160)	3840x2160/4096x2160 (47.95p/48p/50p/59.94p/60p)	YCbCr 4:2:2 10bit
	3840x2160 /4096x2160 (23.98p/24p/25p/29.97p/30p)	GBR 4:4:4 10bits
		GBR+A 4:4:4 10bits
		YCbCr 4:4:4 10bits
		YCbCr+A 4:4:4 10bits
		GBR 4:4:4 12bits
		YCbCr 4:4:4 12bits
		YCbCr 4:2:2 12bits

HDMI Model	Signal Format	Color Space
VESA	2560x1600(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	2048x1152(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1600x1200(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1600x900(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1440x1050(60p)	RGB 8/10/12bits

		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1440x900(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1360x768(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1280x1024(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1280x960(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1280x800(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1280x768(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1024x768(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	800x 600(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	640x 480(60p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits

CTA-861	4096x2160 (60p/ 59.94p/ 50p/ 48p/ 47.95p/ 30p/ 29.97p/ 25p/ 24p/ 23.98p)	RGB 8bits
		YCbCr 4:2:0 8/10/12bits
		YCbCr 4:2:2 8bits
		YCbCr 4:4:4 8bits
	3840x2160 (60p/ 59.94p/ 50p/ 48p/ 47.95p/ 30p/ 29.97p/ 25p/ 24p/ 23.98p)	RGB 8bits
		YCbCr 4:2:0 8/10/12bits
		YCbCr 4:2:2 8bits
		YCbCr 4:4:4 8bits
	2560x1080 (60p/ 59.94p/ 50p/ 48p/ 47.95p/ 30p/ 29.97p/ 25p/ 24p/ 23.98p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1920x1080 (60p/ 60i/ 59.94p/ 59.94i/ 50p/ 50i/ 48p/ 47.95p/ 30p/ 29.97p/ 25p/ 24p/ 23.98p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1280x720 (60p/ 59.94p/ 50p/ 30p/ 29.97p/ 25p/ 24p/ 23.98p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	720x480 (60p/ 59.94p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	640x480 (60p/ 59.94p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	720x576 (50p)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits

	1440x480 (60i/ 59.94i)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits
	1440x576 (50i)	RGB 8/10/12bits
		YCbCr 4:2:2 8/10/12bits
		YCbCr 4:4:4 8/10/12bits