High-Bright

Broadcast Monitor

15.6”/21.5” 1920×1080 Resolution, features with 1200/1000 nits high brightness screen

User Guide

Contents

Important Safety Instructions:

- Please read User Guide before using this product.
- Please keep User Guide for future reference.
- Please read the precaution to prevent possible danger and loss of property.

Precaution:

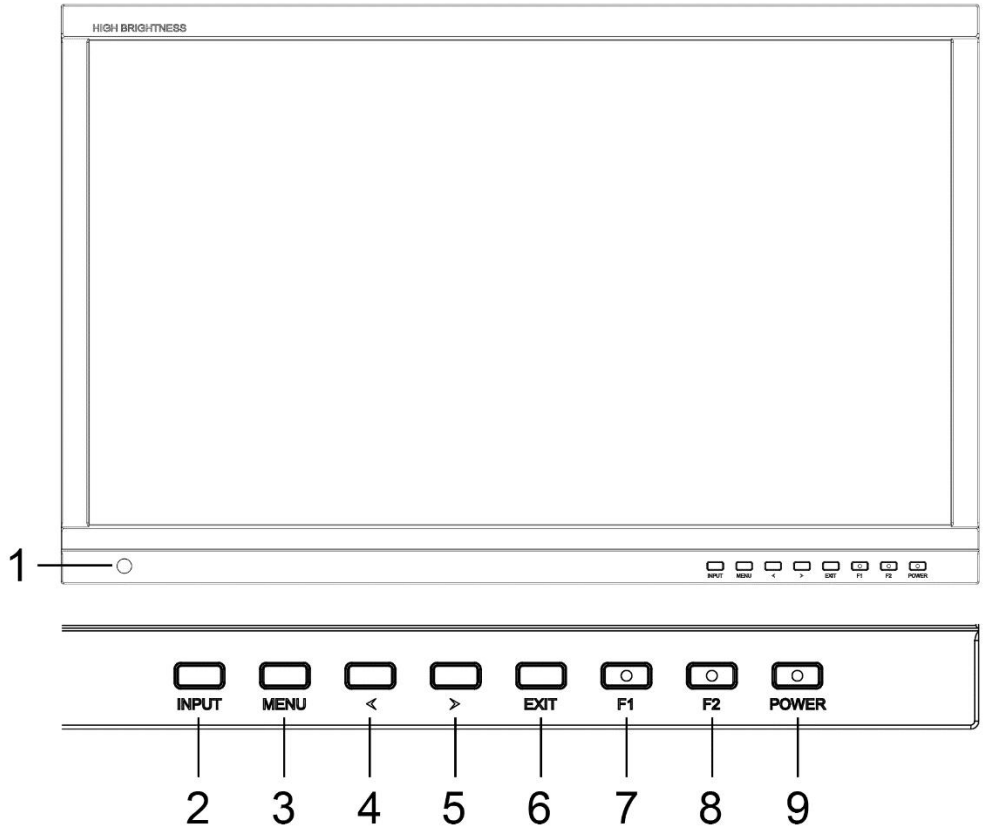
- Please do not place the display screen towards the ground.
- Please avoid heavy impact or drop onto the ground.
- Please do not use chemical solutions to clean this product. Please wipe with a clean soft cloth to maintain the brightness of the surface.
- Please do not block any vent hole.
- Please follow the instructions and trouble-shootings to adjust the product. Other improper adjustment may result in damage. Any further adjustment must be performed or conducted by a qualified technician.
- Please unplug the power and remove the battery if long-term no-use, or thunder weather.

1. Main Features

- Support standard 3G-SDI and HDMI 2.0 input/output.
- Input signals support up to SDI 1920x1080 60/59.94/50/30/29.97/25/24/23.98p and HDMI 3840x2160 60/59.94/50/48/47.95/30/29.97/25/24/23.98p; Signal loop out.
- Support customized various waveform mode: Waveform/Vectorscope/Histogram/Level Meter.
- HDR (High Dynamic Range) display supporting ST 2084/ Hybrid Log Gamma.
- Gamma selection: 1.8-2.8.
- Custom 3D LUT file load through USB.
- Color Gamut supporting SMPTE-C/ Rec709/ EBU
- Color Space/HDR/Gamma/Camera Log comparison with original (side by side).
- Color Temperature: 5500K/6500K/7500K/9300K/User.
- False Color: Default/Spectrum/ARRI/RED.
- Aspect Marker (16:9/1.85:1/2.35:1/2.39:1/4:3/3:2/Grid/ User).
- Anamorphic (1.3X//1.5X/1.8X/2.0X/2.0X MAG).
- Audio: supporting Level Meter, (HDMI supporting 8 channels).
- Time Code: LTC/ VITC.
- Check Field: Red/ Green/ Blue/ Mono.
- Zoom 10%~90%
- Peaking (Red/ Green/ Blue/ White/ Black).

2. Production Description

2.1 Front Panel



1) Light Sensor **(Only available on the 21.5" monitor)**
2) Input Button (Switch between HDMI and SDI)
3) Menu Button
4) Left Button
5) Right Button
6) Exit Button
7) F1 Button and Lamp
8) F2 Button and Lamp

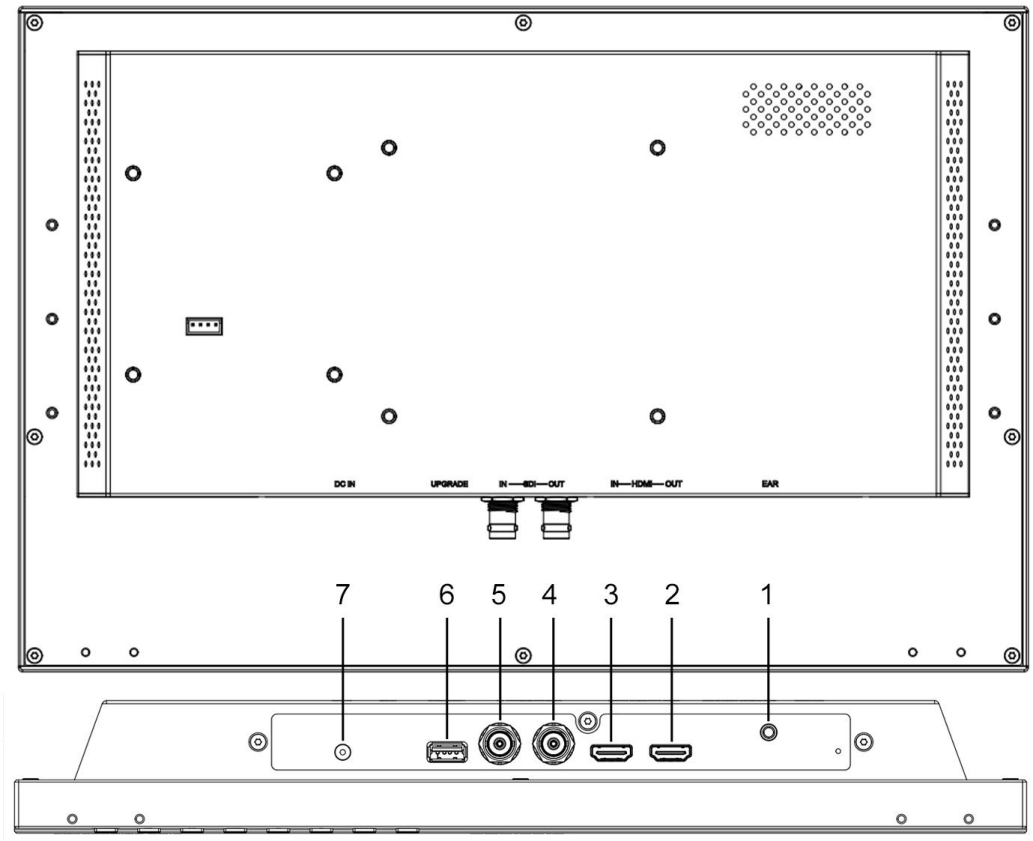
   Assigned function by factory as follow:

   - [F1]: Waveform
   - [F2]: Level Meter

9) Power Button (indicator light)

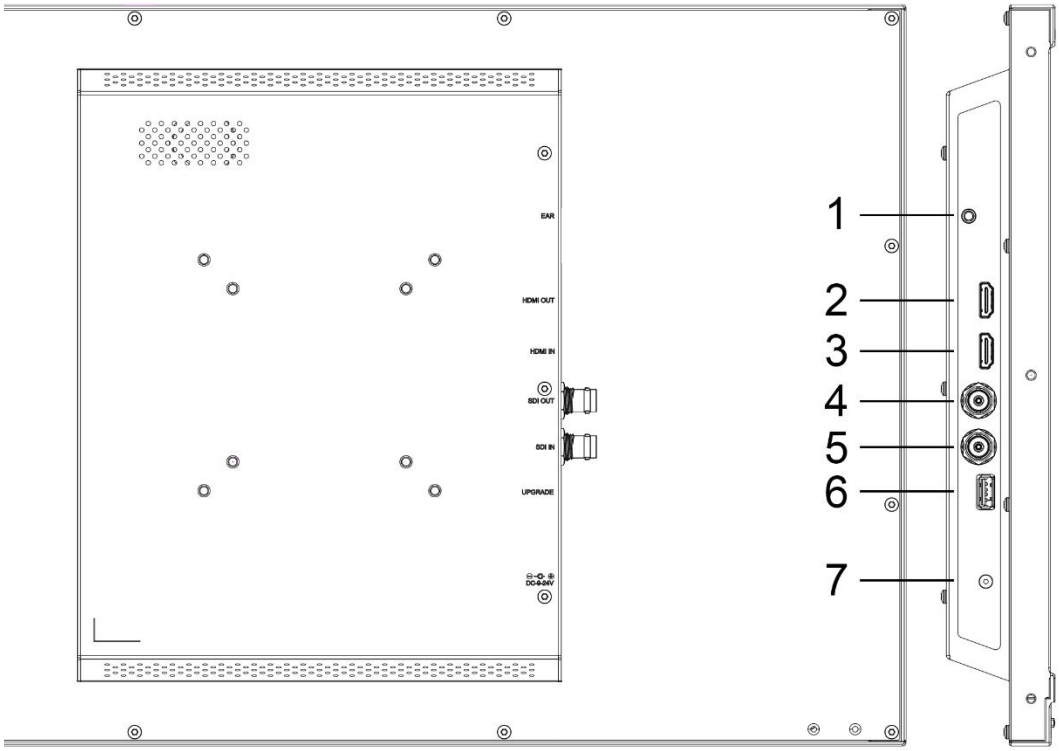
2.2 Rear Panel

2.2.1 Interfaces



(**15.6** Inch **M**onitor)

1) Earphone Jack
2) HDMI 2.0 Output, support 4K 60Hz
3) HDMI 2.0 Input, support 4K 60Hz
4) 3G-SDI Output, support 1080p 60Hz
5) 3G-SDI Input, support 1080p 60Hz
6) USB for upgrade and 3D-LUT
7) DC Power Input, 9V-24V



(21.5 Inch Monitor)

8) Earphone Jack

9) HDMI 2.0 Output, support 4K 60Hz

10) HDMI 2.0 Input, support 4K 60Hz

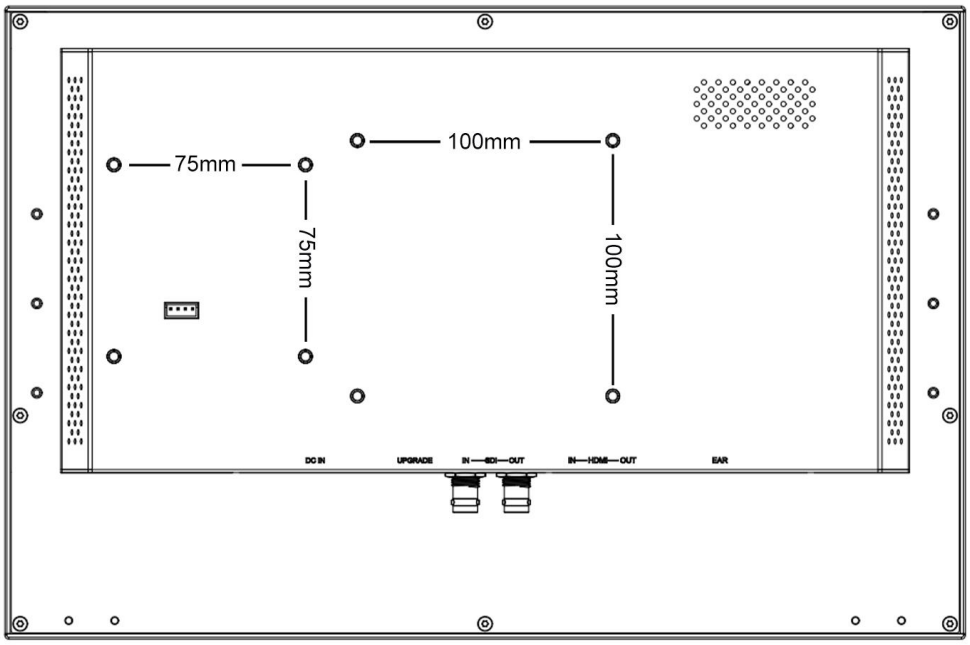
11) 3G-SDI Output, support 1080p 60Hz

12) 3G-SDI Input, support 1080p 60Hz

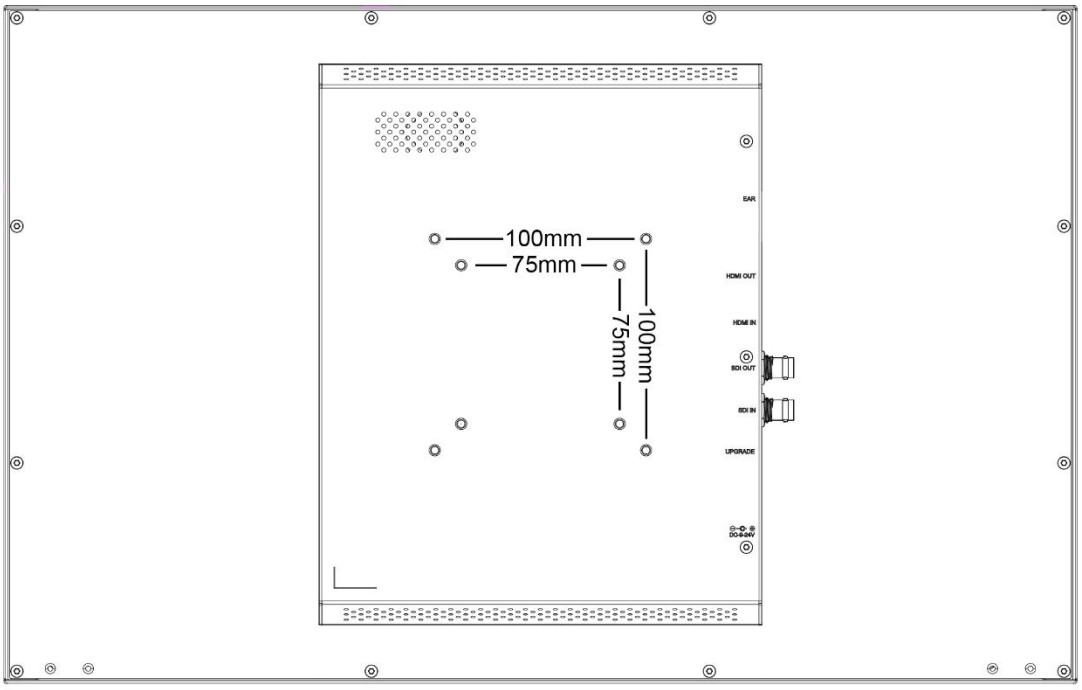
13) USB for upgrade and 3D-LUT

14) DC Power Input, 9V-24V

2.2.2 Standard VESA



(**15.6** Inch **M**onitor)



(21.5 Inch **M**onitor)

- Standard 75mm*75mm is used for external battery (V-mount/ Anton Bauer mount battery).
- Standard 75mm*75mm and 100mm*100mm, can be used for external hanging bracket.

3. Menu Setting

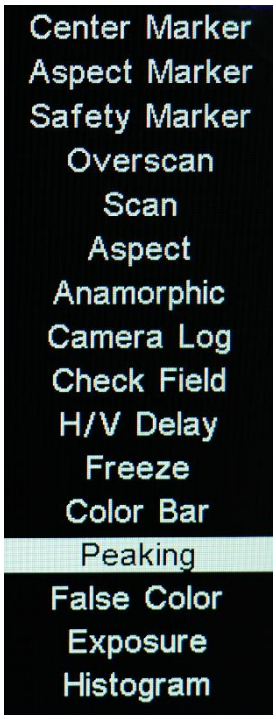
Before setting the functions, please make sure the device is connected correctly.

3.1 Shortcut keys

3.1.1 Menu Button

- Power on the monitor, press Menu button to display OSD, and select options as the following sequence via rotating it: PICTURE/MARKER/FUNCTION/WAVEFORM/AUDIO/SYSTEM.
- Press Menu button to enter the desired function, use right and left buttons to change the value/option, and press Menu or Exit again to confirm the changes.

3.1.2 F1-F2 Buttons:



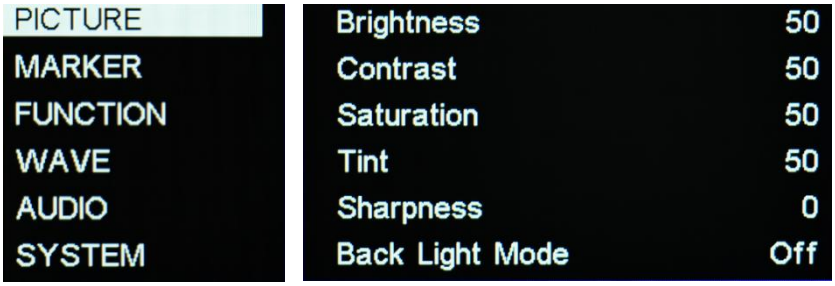
- Long press any F1-F2 buttons for 3-5 seconds to pop up shortcut menu on the screen. As shown in Figure. Select option and set it as default via pressing the Menu button, then press Exit button to exit shortcut setting menu. The customized function will be remembered by F1/F2 buttons.
- Functions of F1-F2 buttons can also be customized: [CenterMarker], [Aspect Marker], [Safety Marker], [Overscan], [Scan], [Aspect], [Anamorphic], [Camera Log], [Check Field], [H/V Delay], [Freeze], [Color Bar], [Peaking], [False Color], [Exposure], [Histogram], [Waveform], [Vector], [Time Code], [Mute], [Level Meter].

  Default function: F1: [Waveform].

  F2: [Level Meter]

3.2 MENU Operations

3.2.1 PICTURE



Brightness	0-100
Contrast	0-100
Saturation	0-100
Tint	0-100
Sharpness	0-100
Back Light Mode	Off/Auto
Back Light	0-100
RGB Range	Full/Limited
HDMI EDID	4K/2K
Color Space	Native/SMPTE-C/Rec709/EBU
Camera Log	Off/Default/User
Def. Log	SLog2ToLC-709/SLog2ToLC-709TA/ SLog2ToSLog2-709/SLog2ToCine+709/ SLog3ToLC-709/SLog3ToLC-709TA/ SLog3ToSLog2-709/SLog3ToCine+709/ ArriLogCTo709/ArriLogCToP3DCI/ CLogTo709/VLogToV709/ JLogTo709/JLogTo709HLG/ JLogTo709PQ/Z7 NLogTo709/ D780 NLogTo709
User Log	No Data/User1-User6
Gamma	Off/1.8/2.0/2.2/2.35/2.4/2.6/2.8
HDR	Off/ST2084 300/ST 2084 1000/ST 2084 10000/HLG
Color Temp.	5500K/6500K/7500K/9300K/User
Red Gain	0-128-255
Green Gain	0-128-255
Blue Gain	0-128-255
Red Offset	0-256-511
Green Offset	0-256-511
Blue Offset	0-256-511

- Brightness

  Control the degree of brightness between 0-100.

- Contrast

  Control contrast ratio between 0-100.

- Saturation

  Adjust the color intensity between 0-100.

- Tint

  Adjust tint between 0-100.

- Sharpness

  Control sharpness of the image between 0-100.

- Back Light Mode

  Back light can be set to adjust automatically: [Off], [Auto]. **(Back Light Mode is only available on the 21.5" model.)**

- Back Light

  Adjust the back light between 0-100.

- RGB Range

  Use this item to choose the RGB range of the HDMI input: [Full], [Limited].

- HDMI EDID

  Select the HDMI EDID from between [4K] and [2K]. This item enables PC or other devices to recognize the property of this monitor and makes the images look excellent on the screen.

- Color Space

  Select the display gamut from among [Native], [SMPTE-C], [Rec709], [EBU].

- Camera Log

  Use this item to choose one of the camera Log modes:

  - [Off]: Turn off Camera Log.

  - [Def. Log]: Use this item to choose one of the Camera Log modes as the following sequence: [SLog2ToLC-709], [SLog2ToLC-709TA], [SLog2ToSLog2-709], [SLog2ToCine+709], [SLog3ToLC-709], [SLog3ToLC-709TA], [SLog3ToSLog2-709], [SLog3ToCine+709], [ArriLogCTo709], [ArriLogCToP3DCI], [CLogToV709], [VLogToV709], [JLog To709], [JLogTo709HLG], [JLogTo709PQ], [Z7 NLogTo709], [D780 NLog To709].

- [User Log]: Use this item to choose one of the User Log modes (1-6). Please install the User Log as following steps:

The User Log must be named with. cube in the suffix. Please note: the device only supports the format of User Log: 17x17x17 / 33x33x33; Data order is BGR; Table order is BGR. If the format does not meet the requirement, please use tool "Lut Tool.exe" to transform it. Naming the User Log as User1-User6.cube, then copy the user Log into USB flash disk. Insert the USB flash disk to the device, the User Log is saved to the device automatically at the first time. If the User Log is not loaded for the first time, the device will pop up a prompt message, please choose whether to update or not.

- Gamma

Use this item to choose the display Gamma: [Off], [1.8], [2.0], [2.2], [2.35], [2.4], [2.6], [2.8].

Gamma 1.8 Gamma 2.8

Note: *Gamma mode can be only activated while HDR function closed.*

- HDR

Use this item to choose one of the HDR presets: [Off], [ST 2084 300], [ST 2084 1000], [ST 2084 10000], [HLG].

- Color Temp.

Use this item to choose one of the color temperature presets: [5500K], [6500K], [7500K], [9300K], [User].

Note: *Only available under [User] mode to adjust R/G/B Gain and Offset.*

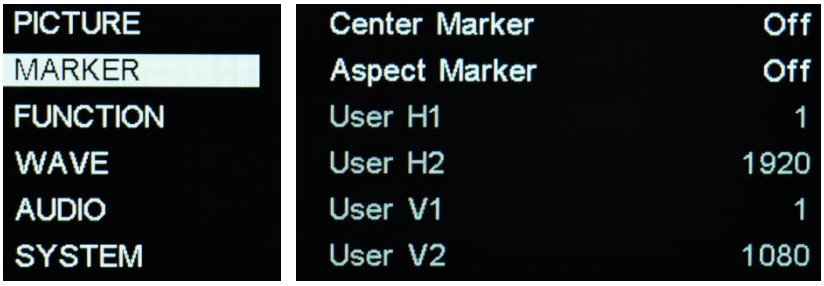
- R/G/B Gain

  Adjust the R/G/B Gain of the current Color Temperature from 0 to 255. Default value: 128.

- R/G/B Offset

  Adjust the R/G/B Offset of the current Color Temperature from 0 to 511. Default value: 256.

3.2.2 MARKER



Center Marker	Off/On
Aspect Marker	Off/16:9/1.85:1/2.35:1/2.39:1/4:3/3:2/Grid/User
User H1	1-1920
User H2	1-1920
User V1	1-1080
User V2	1-1080
Safety Marker	Off/95%/93%/90%/88%/85%/80%
Marker Color	Red/Green/Blue/White/Black
Aspect Mat.	0ff/1/2/3/4/5/6/7
Thickness	1-7

- Center Marker

  Select [On] to display the center marker “+” and [Off] not to display it.

- Aspect Marker

  Select the aspect ratio of the marker: [Off], [16:9], [1.85:1], [2.35:1], [2.39:1], [4:3], [3:2], [Grid], [User].

- User H1/H2/V1/V2

  When the Aspect Marker is in User mode, the position of lines in all four directions can be freely adjusted.

  User H1: 1-1920

  User H2: 1-1920

  User V1: 1-1080

  User V2: 1-1080

- Safety Marker

  - Select [Off] not to display the safety marker. When this item is used with the aspect marker, it is only in aspect marker. When [Aspect Marker] is selected as [User], the safety marker does not be changed.

  - Select the size of the safety markers: [95%], [93%], [90%], [88%], [85%], [80%].

  Note: *When [Aspect Marker] is selected as [Grid], the safety marker cannot be displayed.*

- Marker Color

  Select the color of marker displayed on the screen: [Red], [Green], [Blue], [White], [Black].

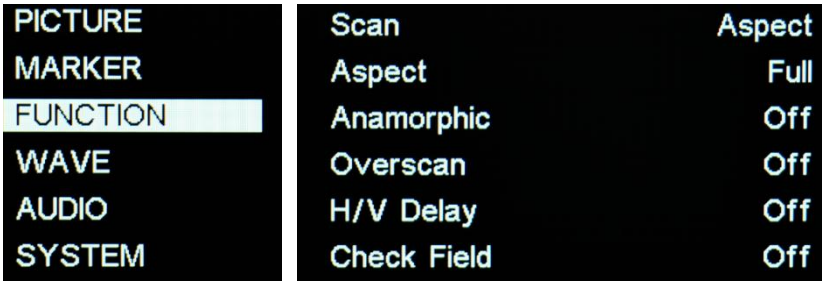
- Aspect Mat.

  When activated, it can be selected from 1-7 (Step value is 1).

- Thickness

  Adjust the thickness of all the marker lines from 1-7 (Step value is 1).

3.2.3 FUNCTION



Scan	Aspect/Pixel To Pixel/Zoom
Aspect	Full/4:3
Anamorphic	Off/1.3X/1.5X/1.8X/2.0X/2.0X MAG
Overscan	Off/On
H/V Delay	Off/H/V/ H/V
Check Field	Off/Red/Green/Blue/Mono
Zoom	10%-90%
Freeze	Off/On

- Scan

  Adjust the scan mode among [Aspect], [Pixel To Pixel], [Zoom].

  Note: *Aspect and overscan functions only can be adjusted only under [Aspect] mode. Both of them cannot be adjusted in [Zoom] and [Pixel To Pixel] modes*.

- Aspect

  Select the aspect of the image among [Full], [4:3].

- Anamorphic De-squeeze

  Restore the deformation of image caused by anamorphic lens. Select the option among [Off], [1.3X], [1.5X], [1.8X], [2.0X] and [2.0X MAG].

- Overscan

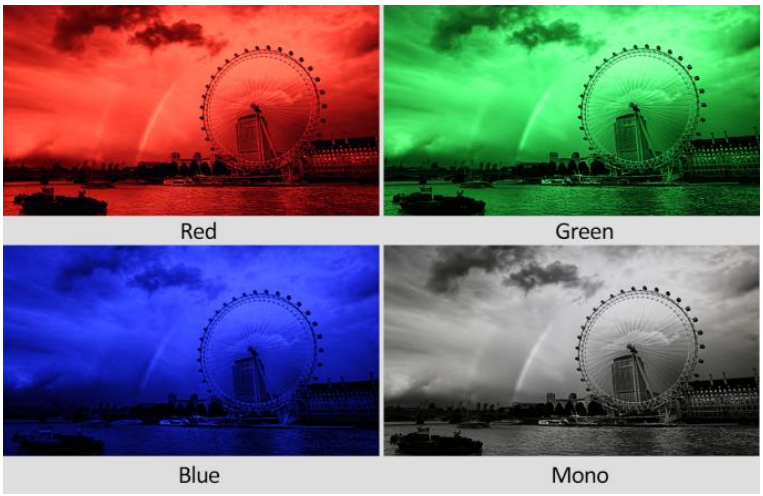
  Use this item to activate or deactivate overscan.

- H/V Delay

  Select one of the H/V modes: [OFF], [H], [V], [H/V]. When H/V Delay on, the blanking portions of the input signal will be displayed horizontally and vertically.

- Check Field

  Select one of check field modes: [Off], [Red], [Green], [Blue], [Mono].



- Zoom

  Select zoom scale from 10% to 90% (Step value is 10%).

  When you select [Scan] as [Zoom], any part of the enlarged image can be displayed on the screen via the Menu Knob.

- Freeze

  Choose [On] to capture one frame of current image on the screen, and choose [Off] to close freeze function.

3.2.4 WAVEFORM

Full Mode	Off/Y/YCbCr/RGB/Vector/Histogram
Waveform	Off/Y/YCbCr/RGB
Vector	Off/On
Transparency	Off/25%/50%
Peaking	Off/On
Peaking Color	Red/Green/Blue/White/Black
Peaking Level	1-100
False Color	Off/Default/Spectrum/ARRI/RED
False Color Table	Off/On
Exposure	Off/On
Exposure Level	50-100IRE

Histogram	Off/Y/RGB/Color
TimeCode	Off/LTC/VITC

- **Full Mode**

  Some features can be displayed in full screen to show more detail: [Waveform Y], [Waveform YCbCr], [Waveform RGB], [Vector], [Histogram].

- **Waveform**

  Use this item to activate or deactivate Waveform. Select the waveform mode from among [Y], [YCbCr], [RGB].

  - [Y]: Display Y Waveform.

  - [YCbCr]: Display YCbCr Waveform.

  - [RGB]: Display R/G/B Waveform.

Waveform Y Waveform YCbCr Waveform RGB

- **Vector**

  Use this item to activate or deactivate Vector.

- **Transparency**

  Adjustment of transparency can support waveform, vector, histogram, audio vector, level meter. Transparency can be selected from among [off], [25%], and [50%].

  - [Off]: The background of waveform is shown at black.

  - [25%]: The background of waveform is shown at 25% intensity.

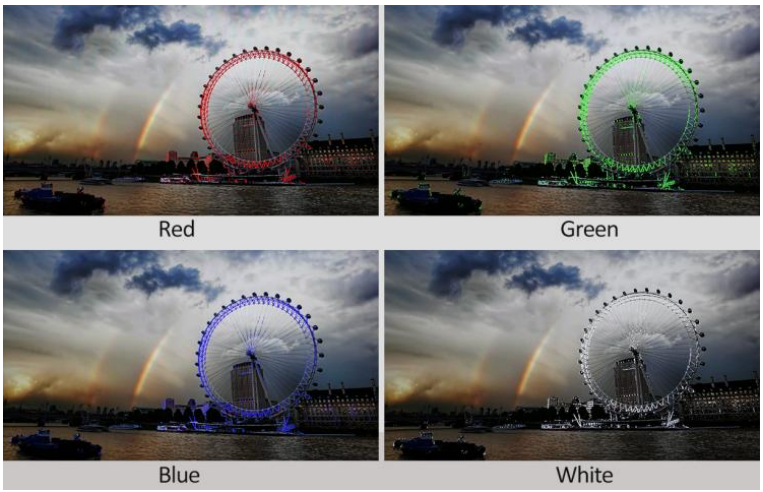
  - [50%]: The background of waveform is shown at 50% intensity.

- **Peaking**

  Use this item to activate or deactivate the peaking function.

- **Peaking Color**

  Select one of the peaking colors: [Red], [Green], [Blue], [White], [Black].



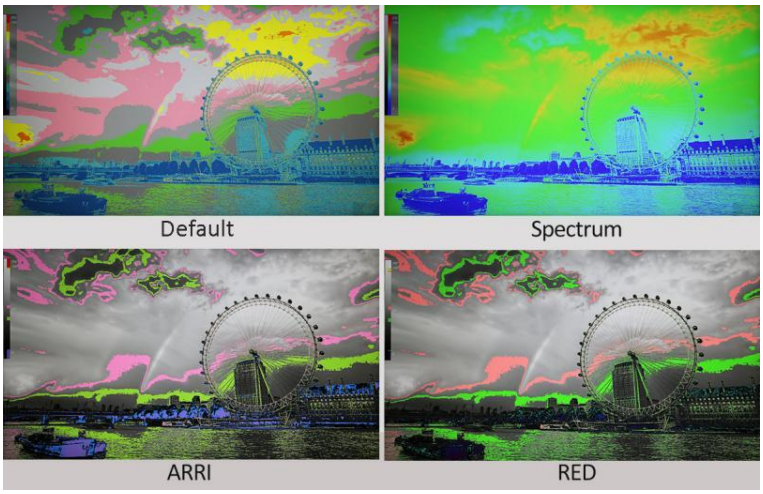
- Peaking Level

  Use this item to adjust the level of peaking from 1-100. The higher peaking level is, the more obvious peaking effect is.

- False Color

  Use this item to activate or deactivate the false color function.

  When activated, [Default], [Spectrum], [ARRI], [RED] are for optional.



- False Color Table

  Use this item to activate or deactivate the false color table. The range of the false color table is between 0-100 IRE.

- Exposure

  Use this item to activate or deactivate the exposure function.

  When activated, exposure works if the input signal exceeds the designated exposure level.

- Exposure Level

Use this item to adjust the level of exposure between 50-100 IRE.

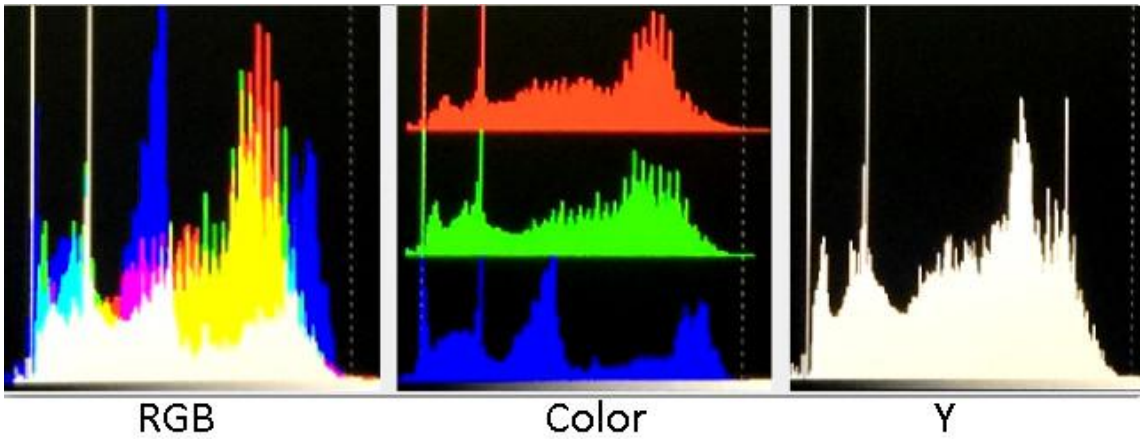
- Histogram

Use this item to activate or deactivate histogram. When activated, [Y], [RGB], [Color] are for optional.

- [Y]: Display Y histogram.

- [RGB]: Display RGB mixed histogram.

- [Color], Display RGB separated histogram.

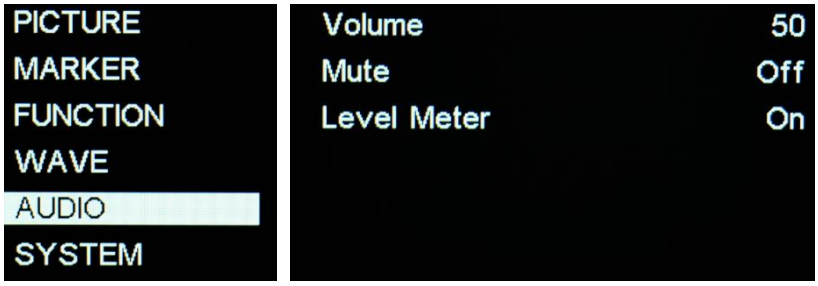


- Time Code

Use this item to activate or deactivate the Time Code. When activated, [LTC], [VITC] are for optional.

Note: *Time code is only available under SDI mode.*

3.2.5 AUDIO



Volume	0-100
Mute	Off/On
Level Meter	Off/On
Audio CH	CH1&CH2/CH3&CH4/CH5&CH6/CH7&CH8 (HDMI) CH1&CH2 (SDI)

- **Volume**

  Adjust the volume among 0-100.

  Audio Source: SDI/HDMI

- **Mute**

  Disable any sound.

- **Level Meter**

  Select whether to activate or deactivate level meter.

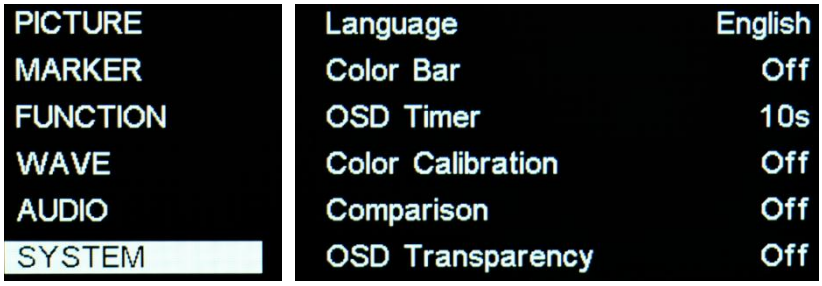
- **Audio Channels**

  In HDMI mode, select one of the audio channels among [CH1&CH2], [CH3&CH4], [CH5&CH6], [CH7&CH8]. Default: [CH1&CH2]

  In SDI mode, the audio channels is [CH1&CH2].

  Note: *Audio Channels are only available under HDMI mode.*

3.2.6. SYSTEM



Language	English/Chinese
Color Bar	Off/100%/75%
OSD Timer	10s/20s/30s
Color Calibration	Off/On
Comparison	Off/Gamma&HDR/Color Space/Camera Log
OSD Transparency	Off/25%/50%
Back Color	Black/Blue
No Signal Mode	Normal/Shutdown
Reset	Off/On

- **Language**

  Option: [Chinese], [English].

- **Color Bar**

  Turn on/off color bar. When the color bar on, it can be selected: [100%], [75%].

- **OSD Timer**

  Option: [10s], [20s], [30s].

- **Color Calibration**

  Select [On] or [Off].

  If the device needs to be calibrated color, please operate as following:

  - Connect the device with the PC via HDMI interface.
  - Make sure the device and color calibration equipment to work more than 30 minutes.
  - After the previous step, activate the Color Calibration function of the device and color calibration software to calibrate the color (See the document “CMS Color Calibration Process” for details).
  - It will generate a document “Rec709.cube” after calibrated, then copy this document to USB flash disk.

- Insert the USB flash disk to the device and save the document. This document “Rec709.cube” will be found under Color Space Option.

- Comparison

  Use this setting to activate or deactivate the Comparison En function.

  When activated, the screen displays the comparison of Original image and customized image, as shown,

  Option: [Off], [Gamma/HDR], [Color Space], [Camera Log]. Default: [Off].

- OSD Transparency

  Turn on/off OSD transparency. When OSD Transparency on, option: [25%], [50%].

- Back Color

  Select the background color when in standby mode, option: [Black], [Blue].

- No Signal Mode

  Adjust the status of the display when there is no signal input, optional: Normal, Shutdown.

- Reset

  Select the Reset option, press the Menu knob to automatically reset.

4. Product Parameters

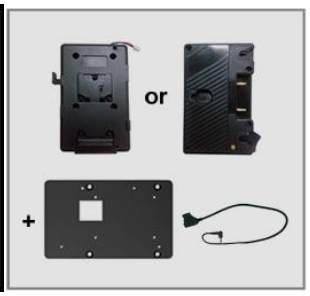
Panel	15.6”	21.5”
Resolution	1920×1080	
Brightness	1200 cd/m²	1000 cd/m²
Contrast	1000:1	
Viewing Angle	160° /160° (H/V)	178°/178°(H/V)
Input	3G-SDI, HDMI 2.0	
Output	3G-SDI, HDMI 2.0	
SDI Support Formats	1080p 24/25/30/50/60, 1080pSF 24/25/30, 1080i 50/60...	
HDMI Support Formats	2160p 24/25/30/50/60, 1080p 24/25/30/50/60, 1080i 50/60, 720p 50/60...	
Earphone	3.5mm	
Built-in Speaker	1	
Power In	DC 9-24V	
Power Consumption	39W (15V)	53W (15V)
Operating Temperature	0~50°C	
Storage Temperature	-20~60°C	
Dimensions (LWD)	376×247.7×49.3mm	508×321×47mm
Weight	KG	4.7KG

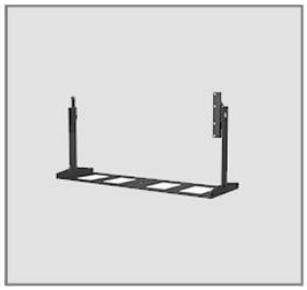
5. Accessories



- **Standard:**

1) 15V/4A DC Adapter 1 pair
2) Base Bracket 1 pair
3) E-User Manual 1 pc



- **Optional:**

4) Carrying Case + Sunshade 1 pair
5) V-Lock or Anton Bauer Battery Mount 1 pair
6) Gimbal Bracket (only available on the 15.6” model.) 1 pair

6. Trouble Shooting

1) Only black-and-white display:

Check whether the color saturation is properly setup or not.

2) Power on but no pictures:

Check whether the cables of SDI and HDMI are correctly connected or not. Please use the standard power adapter coming with the product package. Improper power input may cause damage.

3) Wrong or abnormal colors:

Check whether the cables are correctly and properly connected or not. Broken or loose pins of the cables may cause a bad connection.

4) When on the picture shows size error:

Press “MENU → FUNCTION → Overscan” to zoom in/out pictures automatically when receiving HDMI signals.

5) Other problems:

Please press “MENU” button and choose “MENU→SYSTEM→ Reset →On”.

Note: Due to constant effort to improve products and product features, specifications may change without notice.

Appendix 1: 3D LUT Loading

3D LUT supports upload color calibration document and User Log via USB flash disk.

- **Format Requirement**
  - LUT format

    Type: .cube

    3D Size: 17x17x17/33x33x33

    Data Order: BGR

    Table Order: BGR
  - USB flash disk version

    USB: 2.0

    System: FAT32

Size: <16G

- LUT format Color calibration document: Rec709. cube
- User Log: User1. cube-User6.cube

LUT Format conversion

Please convert LUT format according to the following steps.

Note: For Mac users, please copy the "mac OS" file to Mac, then click and follow the steps below.

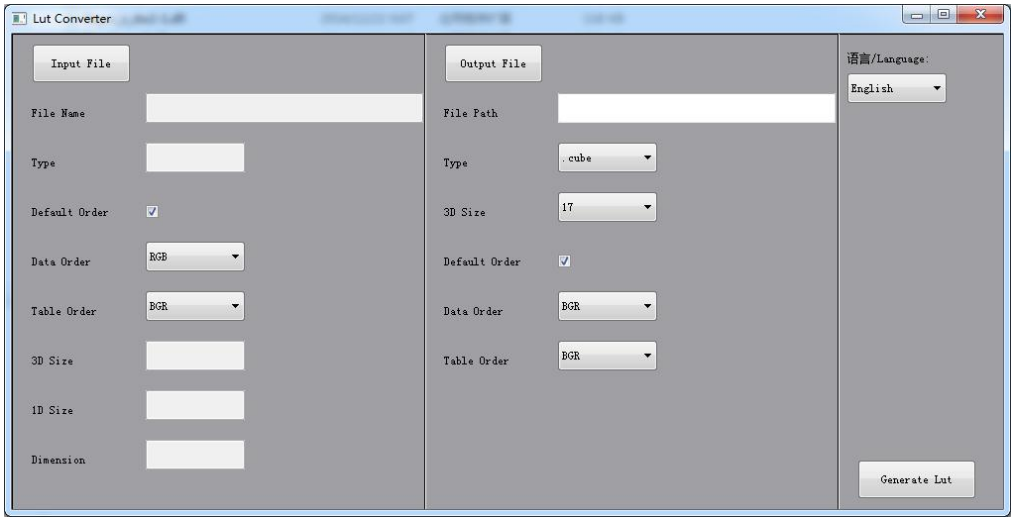
- Activate Lut converter

One individual Product ID for one computer. Please send the ID number to Sales to get an Enter Key.

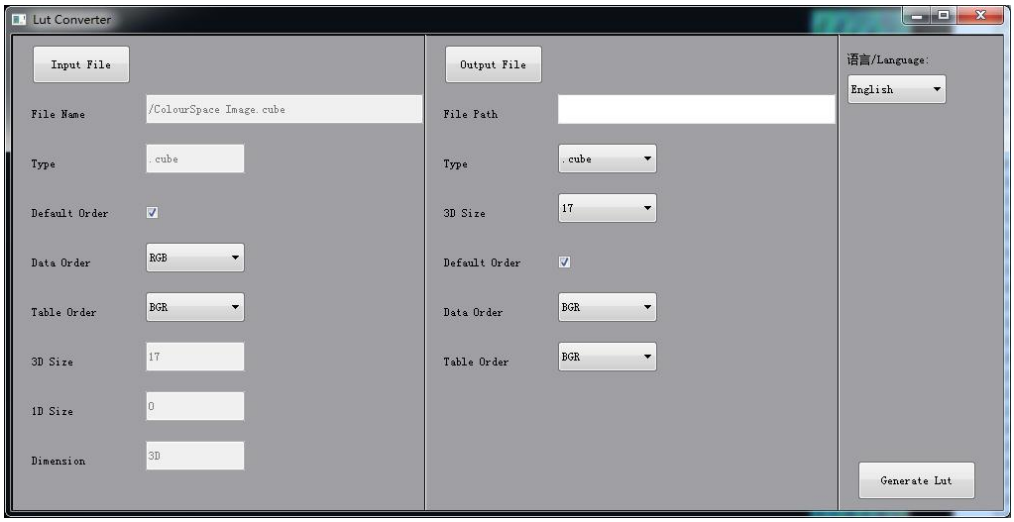
Then the computer gets the permission of the Lut Tool after input the Enter Key.

- LightSpace CMS software user demo

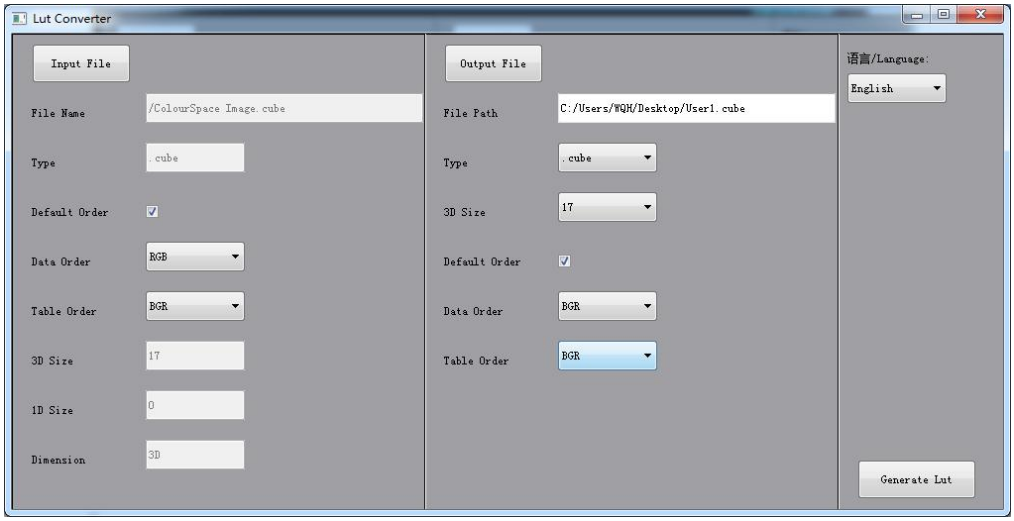
  - Activate LUT Tool.exe.



  - Click Input File, then select *LUT.



- Click Output File, choose the file name.



- Click Generate Lut button to finish.

- USB Loading

Copy the needed files to the root directory of the USB flash disk. Plug the USB flash disk into USB port of the device after power on. Click “Yes” on the pop-up prompt window (If the device doesn’t pop-up the prompt window, please check the LUT document name or the USB flash disk version), then press Menu button to update automatically. It will pop-up a prompt message if the update completed.