aura UHD 24 Series Monitor User Manual

Contents

aura

aura UHD 24 Series Monitor

Product Information

The Aura UHD Series is a range of high-definition monitors designed for professional production and post-production workflows. The series includes three models: Aura UHD 24, Aura UHD 27, and Aura UHD 32. These monitors are equipped with 12G-SDI input and support up to 8K resolution on a native 3840 x 2160 pixels LCD screen. With a 16:9 aspect ratio and 98% DCI-P3 wide color gamut, the Aura UHD series provides precise color reproduction. It also supports custom 3D LUT import and various HDR gamma curves, such as PQ, HLG, and S-Log3.

Product Usage Instructions

Operators Safety Summary

1. **Do Not Remove Covers or Panels:** The unit does not have user-serviceable parts. Removing the top cover may expose dangerous voltages. Do not operate the unit without the cover installed.
2. **Power Source:** The product should be connected to a power source that does not apply more than 230 volts rms between the supply conductors or between both the supply conductor and ground. Ensure a protective ground connection through the grounding conductor in the power cord.
3. **Do Not Operate in Explosive Atmospheres:** Avoid operating the product in explosive atmospheres to prevent explosions.

Installation Safety Summary

1. **Safety Precautions:** When installing the product, ensure that the chassis connects to earth via the ground wire provided in the AC power cord. The AC socket outlet should be installed near the equipment and easily accessible.
2. **Unpacking and Inspection:** Before installation, inspect all delivered goods for damage incurred during

transport, as well as for material and manufacturing faults.

3. **Site Preparation:** Install the product in a clean, properly lit environment that is free from static. Ensure adequate power, ventilation, and space for all components.

Your Product – In the Box
The following items are included in the box:

- Power Adapter

Your Product – Product Overview
The Aura UHD series of monitors are equipped with 12G-SDI input and support up to 8K resolution on a native 3840 x 2160 pixels LCD screen. They have a 16:9 aspect ratio and offer a 98% DCI-P3 wide color gamut. These monitors are designed for professional production and post-production workflows, providing precise color reproduction. They also support custom 3D LUT import and various HDR gamma curves, such as PQ, HLG, and S-Log3.

Thank you for choosing our product!
This User Manual is designed to show you how to use this monitor quickly and make use of all the features. Please read all directions and instructions carefully before using this product.

Declarations

FCC/Warranty

Federal Communications Commission (FCC) Statement
This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference.

Guarantee and Compensation
We provide a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transport, as well as for material and manufacturing faults.

The period of guarantee begins on the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of compliant, we can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other service provided by us, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of our company.

If the purchaser or a third party carries out modifications or repairs on goods delivered by us, or if the goods are handled incorrectly, in particular if the systems are commissioned operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by us either.

The environmental conditions as well as the servicing and maintenance regulations specified in this manual must be complied with by the customer.

Operators Safety Summary

The general safety information in this summary is for operating personnel.

Do Not Remove Covers or Panels
There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

Power Source
This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

Do Not Operate in Explosive Atmospheres
To avoid explosion, do not operate this product in an explosive atmosphere.

Installation Safety Summary

Safety Precautions
For all product installation procedures, please observe the following important safety and handling rules to avoid damage to yourself and the equipment.
To protect users from electric shock, ensure that the chassis connects to earth via the ground wire provided in the AC power Cord.
The AC Socket-outlet should be installed near the equipment and be easily accessible.

Unpacking and Inspection
Before opening product shipping box, inspect it for damage. If you find any damage, notify the shipping carrier immediately for all claims adjustments. As you open the box, compare its contents against the packing slip. If you find any shortages, contact your sales representative. Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

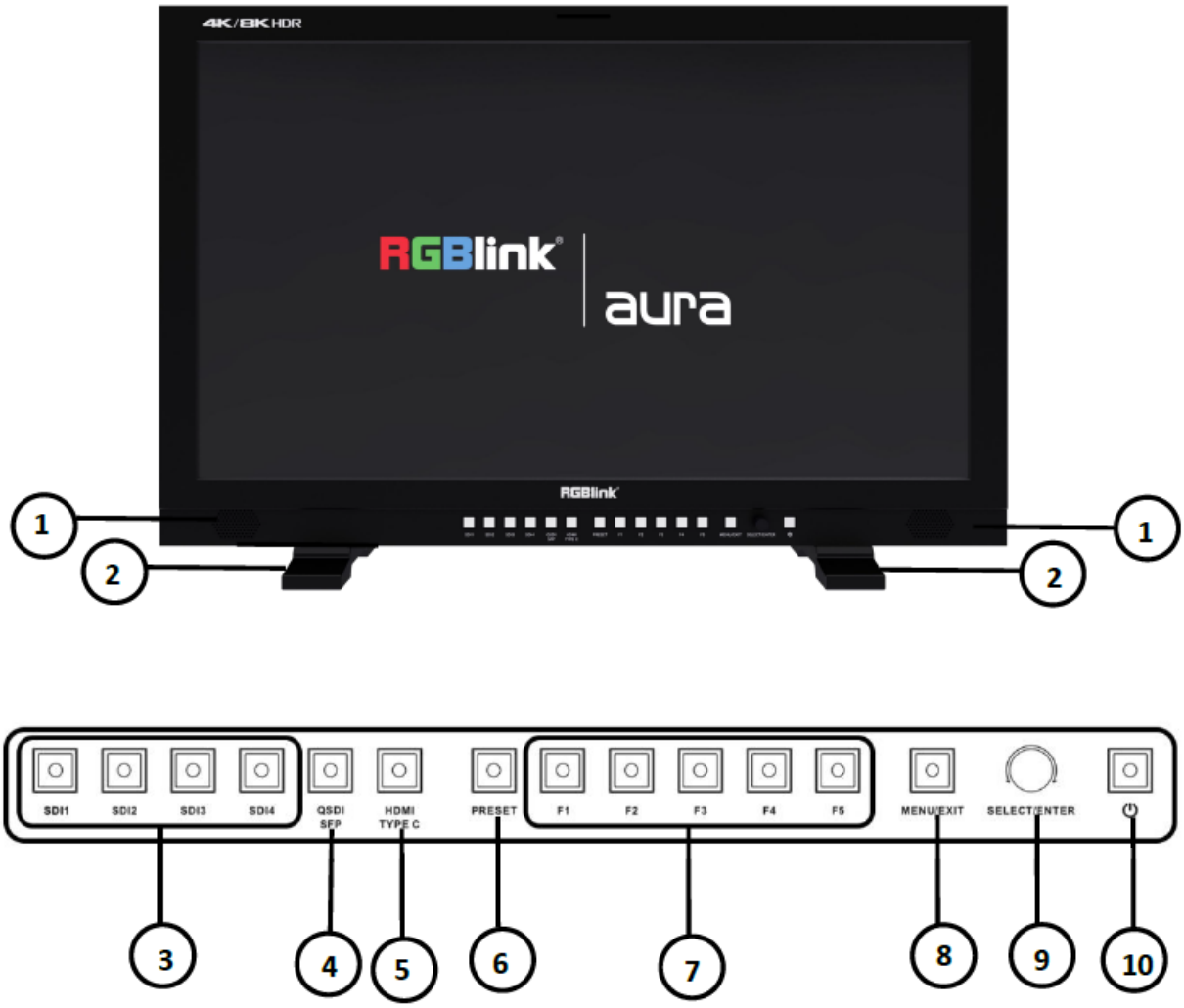
Site Preparation
The environment in which you install your product should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.

In the Box

Product Overview

RGBlink aura UHD series of model aura UHD 24/aura UHD 27/aura UHD 32 is 12G SDI 4K/8K monitor, equipped with 4*12G SDI input , support up to 8K on native 3840 x 2160 pixels LCD screen, 16:9 aspect ratio, 98% DCI-P3 wide color gamut, custom 3D LUT import, designed for professional production and post production workflow. aura UHD series provide precise color reproduction and the unique and supports various HDR gamma curves, such as PQ, HLG, S-Log3.

Front Panel

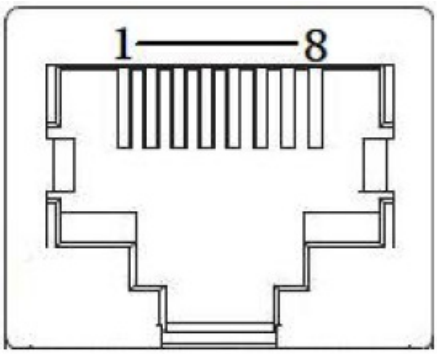


①	Speaker	2-channel speaker with HDMI and SDI embedded audio.
②	Base	Detachable.
③	SDI 1 to SDI 4 Buttons	For SDI 1-4 signal selection.
④	QSDI/SFP Button	Switch between 4-image division mode and optical fiber signal.
⑤	HDMI/Type C Button	For switch between HDMI and Type C signal.
⑥	Preset Button	Preset Mode.
⑦	F1 to F5 Buttons	Soft Keys.
⑧	MENU/EXIT Button	Open/close OSD menu, or go back to previous menu.
⑨	SELECT/ENTER Button	Rotate to select, and press to confirm.
⑩	Power Key	For turn-on (blue light) or turn-off (red light) , 3-second long press for turn-off, short press for turn-on.

Rear Panel

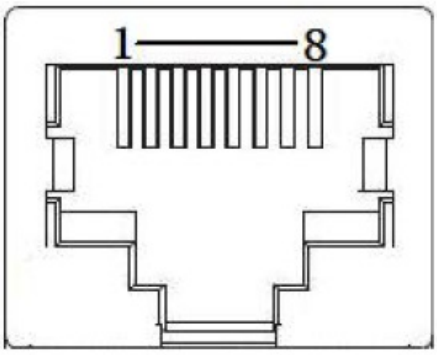
①	Handle	For carrying.
②	3.5mm Earphone Jack	The speaker will be turned off when earphone is connected.
③	USB Interface	For software upgrade.
④	RS422 Interface	In and Loop.
⑤	GPI	GPI interface to achieve remote control.
⑥	Network Port	For connecting network cable.
⑦	12G-SDI Interface	Quad 12G-SDI (In | Loop).
⑧	HDMI Interface	Dual HDMI inputs.
⑨	DC input terminal	4-Pin Cannon interface.
⑩	AC input terminal	220V interface with power switch.

RS422 In/Out Interface Definition



PIN	Name	Description
1	GND	GND
2	GND	GND
3	TX-	Data transmission (-)
4	RX+	Data reception (+)
5	RX-	Data reception (-)
6	TX+	Data transmission (+)
7	NC	Not Connected
8	NC	Not Connected

GPI Interface Definition



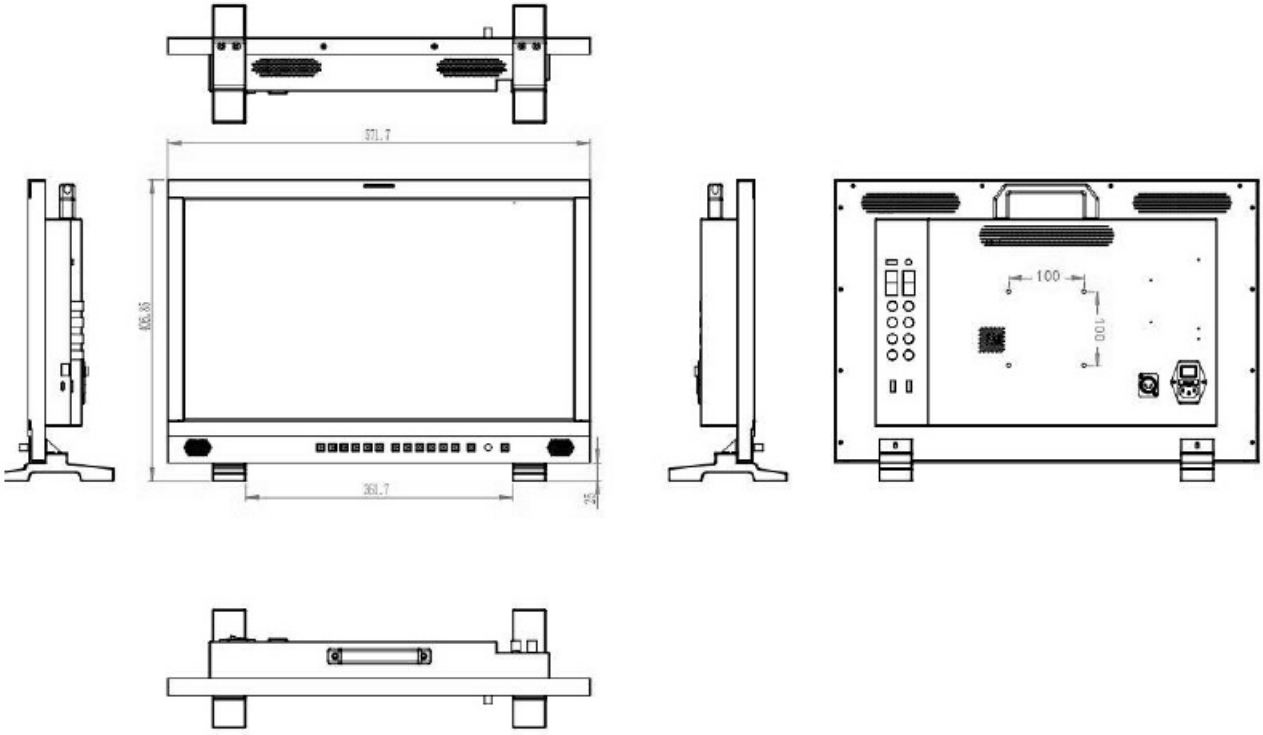
PIN	Name	Description
1	GPI1	Low level trigger preset functions in menu.
2	GPI2	Low level trigger preset functions in menu.
3	GPI3	Low level trigger preset functions in menu.
4	GPI4	Low level trigger preset functions in menu.
5	GPI5	Low level trigger preset functions in menu.
6	NC	Not Connected
7	NC	Not Connected
8	GND	GND

Side Panel

①	Handle	For carrying.
②	SFP Interface	Insert optical fiber module (module is optional).
③	Thunderbolt 3/Type C Input Interface	Compatible with Thunderbolt 3/Type-C.

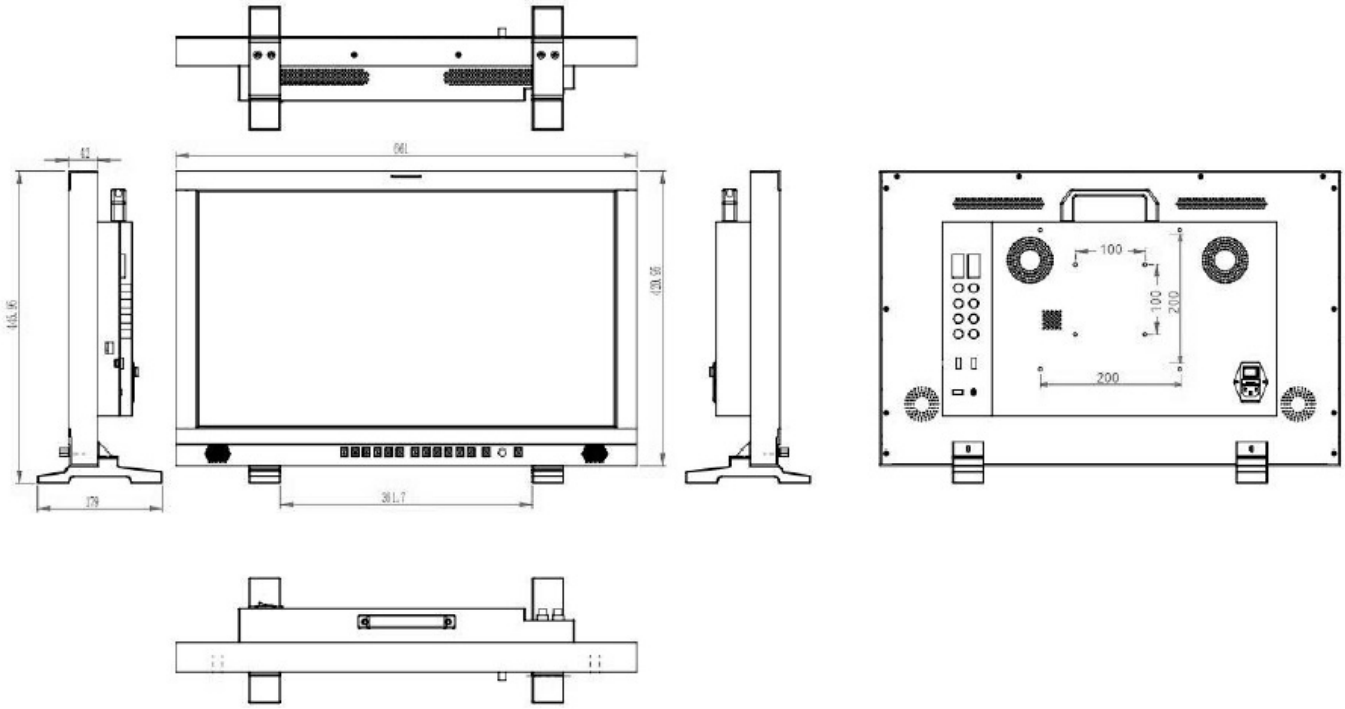
Dimensions
Following is the dimension of monitor for your reference:

aura UHD 24



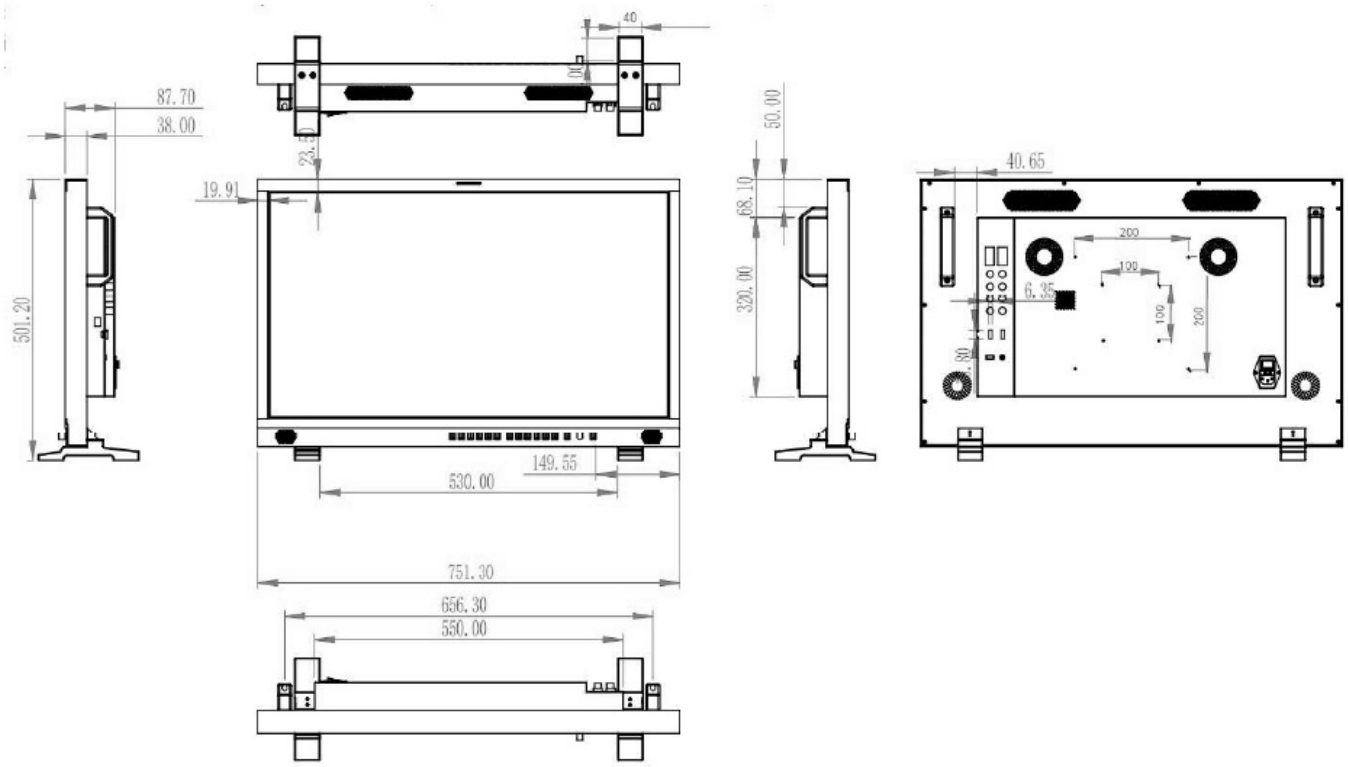
- **Net Weight** 8.6kg
- **Dimension** 572mm×407mm×160mm

aura UHD 27



- **Net Weight** 11.4kg
- **Dimension** 661mm×179mm×420mm

aura UHD 32

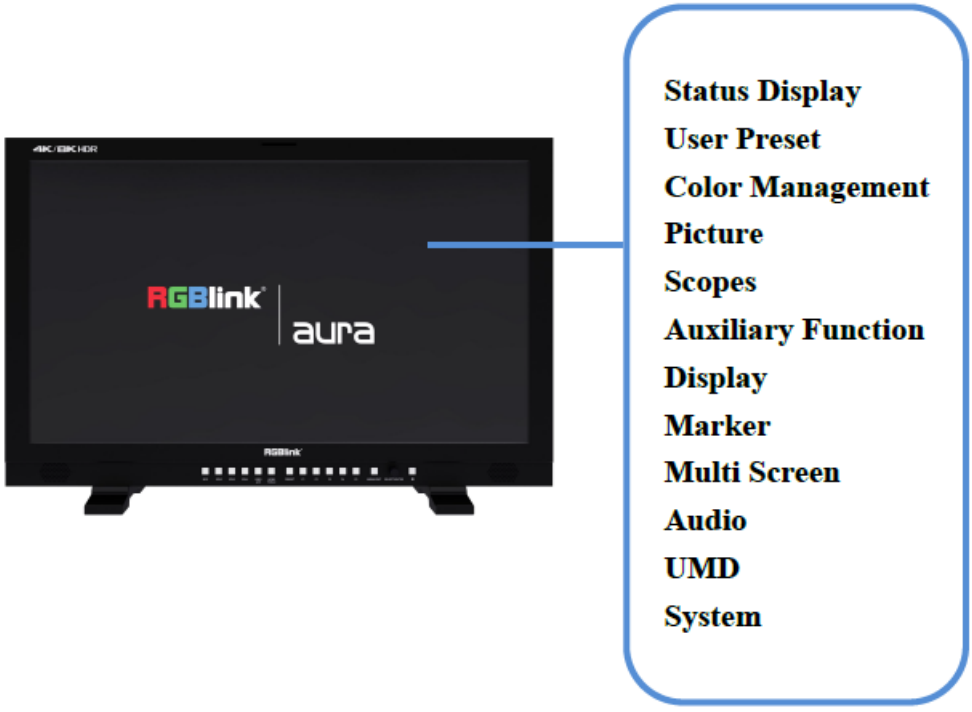


- **Weight:** 15.3kg
- **Gross Weight:** 751mm×179mm×502mm

Use Your Product

Menu

Main Menu



- The monitor comes with OSD menu for parameters adjustment and setting, such as image quality adjustment,

input signal setting and more.

- Use the MENU/EXIT button on the front panel for specific operations of menu.

Status Display

Status Display: Show current settings and status information of monitor.

Status Display	Basic
User Preset	Color Info
Color Management	Scopes & Auxiliary
Picture	SDI Info
Scopes	Hardware Info
Auxiliary Function Display	
Marker Multi Screen Audio	
UMD	
System	

- **Basic Information**
  Show Input Source, Resolution, Image Division, Scan Mode, Aspect Ratio, Zoom Mode, Freeze, Flip Mode, Multi Screen Mode, Key Lock, Audio Source, Volume.
- **Color Information**
  Show Color Preset Mode, Color Temp, Color Gamut, Gamma (EOTF), HDR Auto Setting, Backlight, Input Range, Contrast, Brightness, Chroma, Aperture.
- **Scopes & Auxiliary Information**
  Show Waveform, Histogram, Vector Scope , False Color, Zebra, Test Signal, SDI Eye Diagram, Blue Only/Mono , Screen Saver.
- **SDI Info**
  Show SDI Input, Payload ID, Video Standard, Sampling, Picture Rate, Scanning Mode, Bit Depth, Link Assignment, Colorimetry, Transfer Type.
- **Hardware Information**
  Show Hardware Version, Software Version, FPGA Version, Serial Number, Model Name, IP address, Subnet Mask, Gateway and Port Number.

User Preset

User Preset: Preset function keys and GPI, and store, load and restore the preset values.

Status Display	F Button Preset
User Preset	F1 Button
Color Management Picture Scopes Auxiliary Function Display Marker Multi Screen Audio UMD System	F2 Button F3 Button F4 Button F5 Button GPI Preset GPI1 GPI2 GPI3 GPI4 GPI5 All Data Load All Data Save

- **F Button Preset**
  Five modes with different functions, which are corresponding to the F1-F5 shortcut keys on the front panel. Users can also modify the five preset modes.
- **F1 to F5 Button**
  - **Functions of F1 to F5 buttons can be set as following:**
    Color preset mode, gamut, gamut contrast, gamut warning, camera log, color temperature, black level expansion, window selection, flip mode, static frame, waveform, single-line waveform, vector, histogram, audio table, auxiliary focus, false color, zebra, UMD, marker display, cross hatch, all-blue/black-white mode, time code, audio signal source, and so on.
- **GPI Preset**
  5 presets available, which can achieve distant control, storage and load.
- **GPI1 to GPI5**
  - **Functions of GPI1 to GPI5 can be set as following:**
    SFP, SDI1-4, 4XSDI(SQD), 4XSDI(2SI), HDMI, UMD, marker display, cross hatching, red Tally, green Tally, yellow Tally, time code, static frame, flip mode, auxiliary focus, false color, zebra crossing, waveform, single-line waveform, histogram, vector, audio signal source, audio table.
- **Data Load**
  Load data of preset F1-F5.

Color Management
Color Management: For color setting and adjustment.

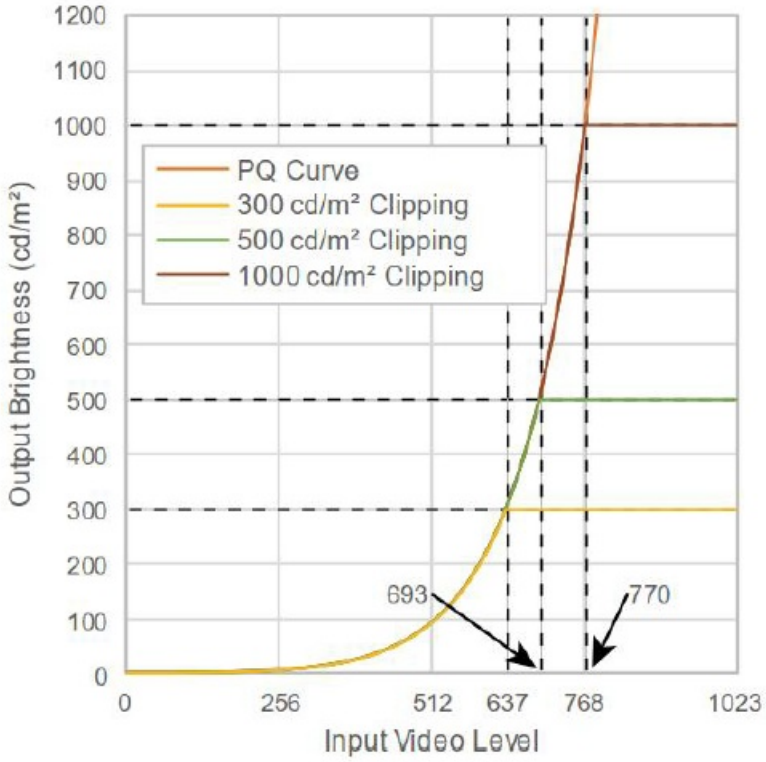
Status Display User Preset	Color Preset Mode Backlight
Color Management	Gamma(EOTF
Picture Scopes Auxiliary Function Display Marker Multi Screen Audio UMD System	PQ Option HLG System Gamma Color Gamut Color Gamut Warning Color Gamut Clipping Luminance Warning EETF Camera Log User Camera Log HDR Auto Setting Gamut Comparison Left Color Gamut Right Color Gamut

- **Color Preset Mode**

  Show BT.709, BT.2020, DCI-P3, PQ_DCI-P3, PQ_BT.2100, HLG_BT.2100, User 1-5
- **Backlight**
  - 0~100 adjustable.
  - Gamma(EOTF)
- **Set Gamma EOTF as following**

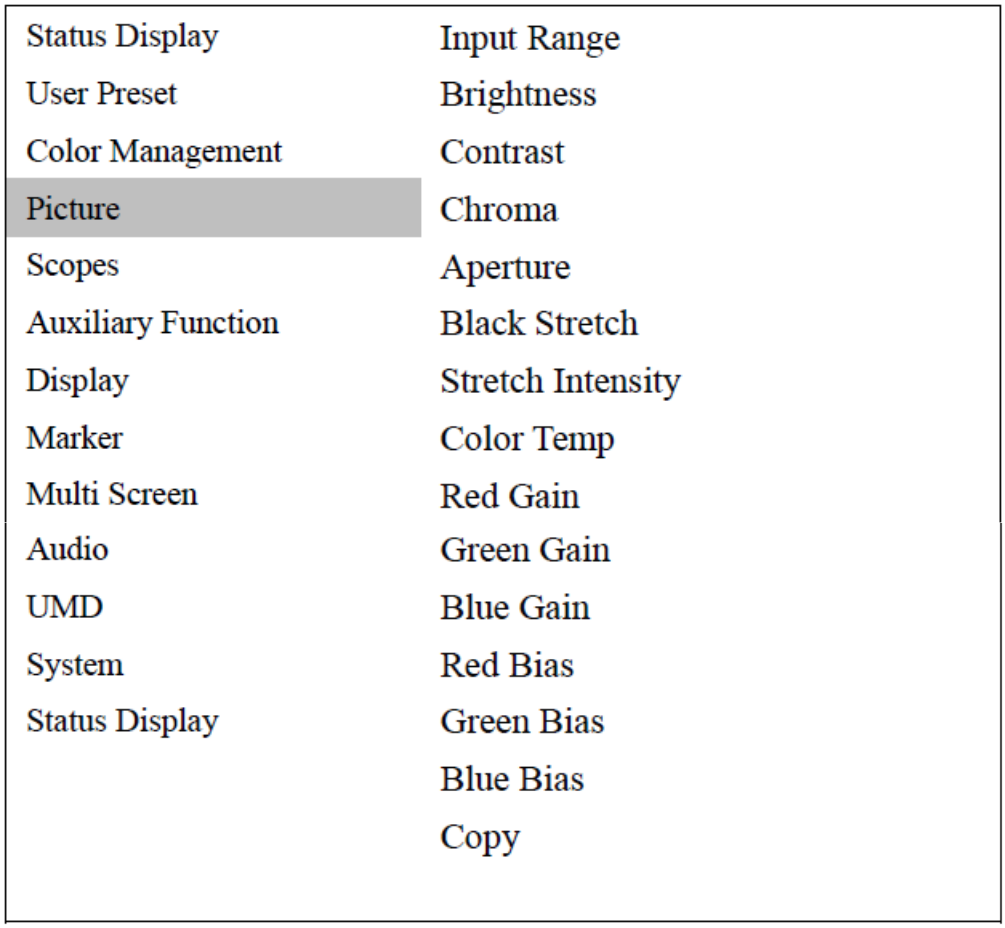
  Gamma2.0, Gamma2.2, Gamma2.4, Gamma2.6, SMPTE ST 2084(PQ), ITU-R BT.2100(HLG), S-Log3, Canon Log, User Gamma LUT1-4
- **PQ Option**
  - **Show different brightness value:**

    PQ-300, PQ-500, PQ-1000



- **HLG System Gamma:**
  1.0, 1.1, 1.2, 1.3, 1.4, 1.5
- **Color Gamut:**
  - **Choose from**
    Origin, ITU-R BT.709, SMPTE-C, EBU, DCI-P3, ITU-R BT.2020, User 1-5
- **Gamut Warning: ON/OFF**
  This function will show an image beyond BT.709 in magenta, reminding that the image will not be able to display the color of the part beyond the monitor screen when editing with Rec.709. This function is only effective under BT.2020 color gamut.
- **Luminance Warming: ON/OFF**
  Maximum brightness shows in magenta.(Only can be chosen under PQ_BT.2100,HLG_BT.2100)
- **EETF: ON/OFF**
  This is a conversion function of the HDR signal, which can display the HDR information of the monitor's actual brightness. When this function is turned on, the highest brightness of HDR is automatically mapped to the highest brightness of the monitor, and the details of the image will be preserved. When this function is turned off, the part of the image that exceeds the real brightness of the monitor will be saturated. This function is only available in PQ mode.
- **Camera Log**
  Choose from
  - OFF
  - SLog3 To LC-709TypeA
  - SLog3 To SLog2-709
  - SLog3 To Cine+709
  - SLog3 to Rec709
  - SLog2 to Rec709
  - Canon Log to Rec709
  - Canon Log to Cineon
  - Arri LogC to Rec709
  - V-Log to V-709
  - User Log
- **User Camera Log**
  Log1-8 can be customized, which can be achieved via network or USB.
- **HDR Auto Setting: ON/OFF**
  The monitor will automatically select the color gamut and EOTF(PQ or HLG) curve according to the payload ID of the SDI signal source.
- **Gamut Comparison: ON/OFF**
  Can achieve comparison between left and right windows of different color gamut.
- **Left/Right Color Gamut**
  - **Choose from**
    Original, ITU-R BT.709, SMPTE-C, EBU, DCI-P3, ITU-R BT.2020, User 1-5.

Picture
For adjustment of picture parameter.



- **Input Range**
  - Limited: 64-940
  - Full Range: 0-1023
  - SDI Range 4-1019
  - Extension: 64-1019
- Brightness:-1024~1023 (Default:0)
- Contrast:-1024~1023 (Default:1024)
- Chroma: -50~50 (Default:0)
- Aperture: 0~100 (Default:50)
- **Black Stretch: ON/OFF**

  This function can enhance contrast
- Stretch Intensity:0~1023 (Default:512)
- Color Temp: Choose from D55,D65 default ,D93,DCI-P3,User 1-3(Set the color temperature to save and load.)
- Red, Green, Blue Gain: 0~2047 (Default:1024)
- Red, Green, Blue Bias: -512~511 (Default:0)
- **Copy:** For copy of white balance data of selected color temperature.
  - **Choose from:** D55,D65,D93,DCI-P3,User 1-3
- **Scopes**

  To monitor, analyze and adjust video signals.
  - Status Display Waveform
  - User Preset Waveform Color
  - Color Management WFM Single Line
  - Picture WFM Line Count

    - Scopes Vertical Height
    - Auxiliary Function Vector Scope
    - Display Vector Color
    - Marker Histogram
    - Multi-Screen BG Transparency
    - Audio Scopes Position
    - UMD
    - System
- **Waveform:** OFF/Brightness Waveform/Component Waveform, RGB Waveform, RGB Superimposed Waveform
- **Waveform Color:** white, green, yellow
- **WFM Single Line:** ON/OFF
- **WFM Line Count:**
  Adjust the waveform with specific lines when displaying single-line waveform. (Only available under single-line waveform, and the range of line number depends on the current signal format.)
- **Vertical Height:**
  Display height of single-line waveform, choose from 128-lines, 256-lines and 512-line.
- **Vector Scope: ON/OFF**
  The color and saturation of the image are represented by waveform in a vector oscilloscope. The higher the saturation, the more stretched the waveform.
- Vector Color: white or green
- **Histogram:**
    - Choose from: OFF,Brightness Histogram, RGB Histogram, RGB Superposition Histogram.
- BG Transparency: Dark, low and high
- Scopes Position: low, medium and high

Auxiliary Function
Auxiliary Function: To monitor, analyze and adjust video signals.

- Status Display False Color
- User Preset Full-Blue/Black-White Mode
- Color Management Auxiliary Focus
- Picture Focus Intensity
- Scopes Zebra Crossing
- Auxiliary Function Zebra Crossing Intensity
- Display Time Code
- Marker Test Signal
- Multi Screen
- Audio
- UMD
- System

1. **False Color: ON/OFF**
   Different false-color images are displayed when there are different exposure pictures in the image.

2. **Blue Only/Mono:**

   Monochrome Mode Setting OFF, All-Blue, Black-White, All-Red, All-Green

   Focus Assist:

   1. Choose from: OFF, Red, Blue, Green
3. Focus Intensity: Set auxiliary focus intensity
4. **Zebra: ON/OFF**

   Count the display area in the image where the Y value is greater than the set value, and mark it with a white slash.
5. **Zebra Intensity:**

   Adjust zebra crossing intensity
6. **Time Code:**

   Set the time code format. OFF,LTC,VITC
7. **Test Signal: OFF, Color Bar, White, Red, Green, Blue**

   This function can directly display the stored color bar or solid color picture without external signal input, serving as the standard reference color or detecting the monitor screen.

Display
Settings of various display modes.

Status Display User Preset Color Management Picture Scopes Auxiliary Function	Aspect Ratio Scan Mode Zoom Mode Flip Mode Freeze Cross Hatch
Display	
Marker Multi-Screen Audio UMD System	

- **Aspect Ratio**

  Choose from: AUTO,1:1,16:9,4:3,2.35:1,1.85:1,15:9,16:10
- **Scan Mode**
  - **Choose from:** Zero Scan, Overscan.
- **Zoom Mode:** Achieve a partial amplification of the image.
  - **Choose from:** OFF, Upper Left, Top, Upper Right, Left, Right, Bottom, Bottom Left, Bottom Right, Middle
- **Flip Mode**

  Choose from:OFF, Horizontal Flip, Vertical Flip, Simultaneous Flip
- **Freeze**
  - **ON:** To capture and display a current image.
  - **OFF:** Continue to play the video.
- Cross Hatch: OFF/ON

This function can display grid lines to help focus different objects.

Marker
Settings of various marking lines.

Status Display User Preset Color Management Picture Scopes Auxiliary Function Display	Marker Display Aspect Marker Center Marker Safety Area Fit Marker Marker Outside Line Color
Marker	Line Thickness
Multi-Screen Audio UMD System	

- **Mark Display:** ON/OFF
- **Aspect Marker**
  - **Choose from:** OFF,16:9,15:9,14:9,13:9,4:3,2.35:1,1.85:1
- **Center Mark:** OFF, Type 1, Type 2
- **Safety Area**
  Choose from: OFF,80%,85%,88%,90%,93%
- Fit Marker: ON/OFF
  - **ON:** Safe area with aspect ratio
  - **OFF:** Safe area with a screen ratio
- **Marker Outside:**
  Choose from: OFF, Black, Gray, Translucent
- Line Color
  Choose from: White, Red, Green, Blue, Black, Gray
- Line Thickness
  Choose from: 2 pixels, 4 pixels, 6 pixels, 8 pixels

Multi-Screen
Simultaneous monitoring of multiple screens.

- Status Display Multi Screen Mode
- User Preset Screen A Input
- Color Management Screen B Input
- Picture Screen C Input
- Scopes Screen D Input
- Auxiliary Function Screen A Color Mode
- Display Screen B Color Mode
- Marker Screen C Color Mode

- Multi-Screen Screen D Color Mode
- Audio Screen Border
- UMD Screen A Border Color
- System Screen B Border Color
- Screen C Border Color
- Screen D Border Color
- **Multi-Screen Mode:** Display multiple signal sources on the same screen
  - **Choose from:** OFF, Side 3-Split, Bottom 3-Split, Live Broadcast Mode, PBP, PAP
- **Screen A-D Input:**
  Input signal can be chosen from: SDI1, SDI2, SDI3, SDI4, HDMI, SFP, HDMI2, and TYPE C (Note: Screen C can only display HDMI2 and TYPE C.)
- **Screen Color Mode:** Choose the color mode of Screen A-D.
- **Screen Border:**
  The border thickness of the screen can be chosen from: OFF, 2 pixels, 4 pixels, 6 pixels, 8 pixels
- **Border Color**
  Choose from: Red, Green, Blue, White, Yellow

Audio
Settings of audio and audio meter table.

- Status Display Audio Source
- User Preset Speaker Out Left
- Color Management Speaker OutRight
- Picture Volume
- Scopes Audio Level Meter
- Auxiliary Function Meter Direction
- Display
- Marker
- Multi Screen
- Audio
- UMD
- System
- **Audio Source**
  Choose from: Undefined, embedded audio
- **Speaker Out Left/Right**
  Choose from CH1, CH2, CH3, CH4, CH5, CH6, CH7, CH8, CH9, CH10, CH11, CH12, CH13, CH14, CH15, CH16
- Volume: 0~100 (Default:30)
- Audio Level Meter: OFF,G1
- Meter Direction
  Choose from: vertical and horizontal.

UMD
Settings of UMD, TSL, and Baud Rate.

- **UMD Display:** ON/OFF
- **Character Color**

  Choose from: White, Red, Green, Yellow, Cyan, Magenta
- **UMD Position**

  Position can be set from top or bottom.
- **UMD Size**

  Set UMD size to be large or small.
- **UMD Transparency**

  Choose from OFF,Low,High
- Display Type: Source ID,UMD
- UMD Standard: OFF,TSL V3.1,TSL V4.0,TSL V5.0
- UMD ID: 0~127 (Default: 0)
- Baud Rate: 38400,8,e,1 ; 115200,8,e,1
- Source Name: Set name of UMD source

System
Settings of Key Lock, Language, Menu Transparency and more.

- Status Display Key Lock
- User Preset Language
- Color Management Menu Timer
- Picture Menu Position
- Scopes Menu Transparency
- Auxiliary Function Source Display
- Display Key LED
- Marker Factory Reset
- Multi Screen
- Audio
- UMD
- System
- **Key Lock:** OFF/Full Lock
  - **Full Lock:** All function keys are locked and cannot be used. Users need to enter the menu to select OFF for reuse.
- **Language:** English/Simplified Chinese
- **Menu Timer:** 5s, 10s, 30s, 60s (OSD disappears after the corresponding time.)
- **Menu Position:**

  Choose from: Top Left, Top Right, Middle, Left, Right
- **Menu Transparency**

  Increase transparency to see the background image directly.
- Source Display: OFF/ON
- Key LED: OFF/ON
- Factory Reset: NO/Reset All Settings

Ordering Codes

Product Code

- 400-2380-02-0 aura UHD 24 23.8 Inch 12G-SDI HDR Monitor
- 400-2700-02-0 aura UHD 27 27 Inch 12G-SDI HDR Monitor
- 400-3200-02-0 aura UHD 32 32 Inch 12G-SDI HDR Monitor

Support

Contact Us

- **www.rgblink.com**.

Inquiries

- +86-592-577-1197
- **info@rgblink.com**
- **argblink.com/contact-us**

Global Support

- **support@rgblink.com**
- **argblink.com/support-me**.

@RGBLINK /rgblink +rgblink /rgblink rgblink rgblink

RGBlink Headquarters
Xiamen, China
Room 601A, No. 37-3 Banshang community, Building 3, Xinke Plaza, Torch Hi-Tech Industrial Development Zone, Xiamen, China
+86-592-577-1197

China Regional Sales & Support
Shenzhen, China
705, 7th Floor, South District, Building 2B, Skyworth Innovation Valley, No. 1 Tangtou Road, Shiyan Street, Baoan District, Shenzhen City, Guangdong Province
+86-755 2153 5149

Beijing Region Office
Beijing, China
Building 8, 25 Qixiao Road Shahe Town Changping
+010- 8577 7286

Europe Regional Sales & Support
Eindhoven, Holland
Flight Forum Eindhoven 5657 DW
+31 (040) 202 71 83

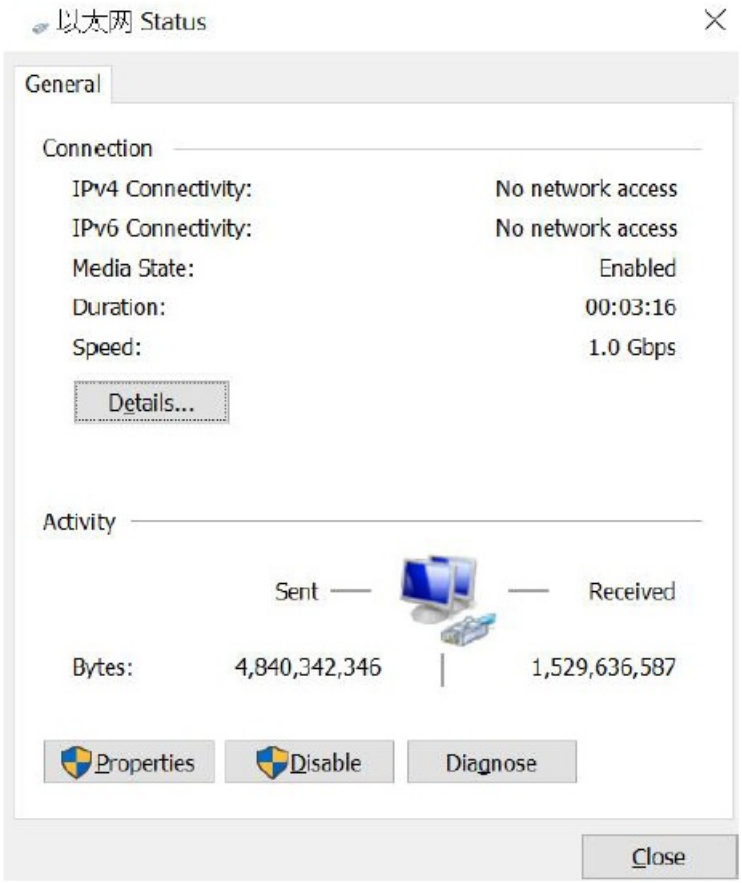
Upgrade

Network Upgrade Program Description

Preparations before the upgrade:

1. Connect the computer and monitor with Ethernet network cable. (The default IP address is 192.168.1.128.)

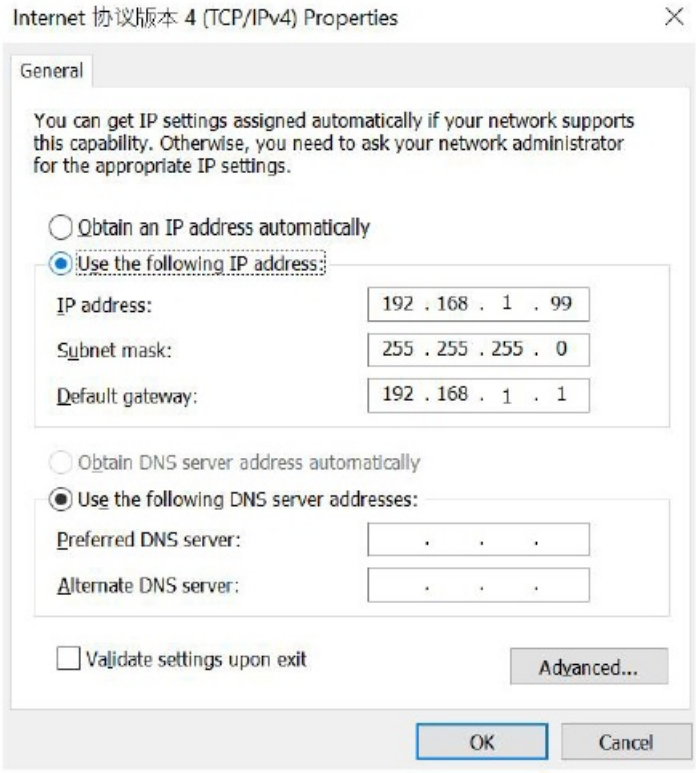
2. Set the Ethernet to a fixed IP address on the PC.
3. Open the “Network Connection” page on the PC, select the corresponding “Ethernet”, double-click, the following interface is displayed.



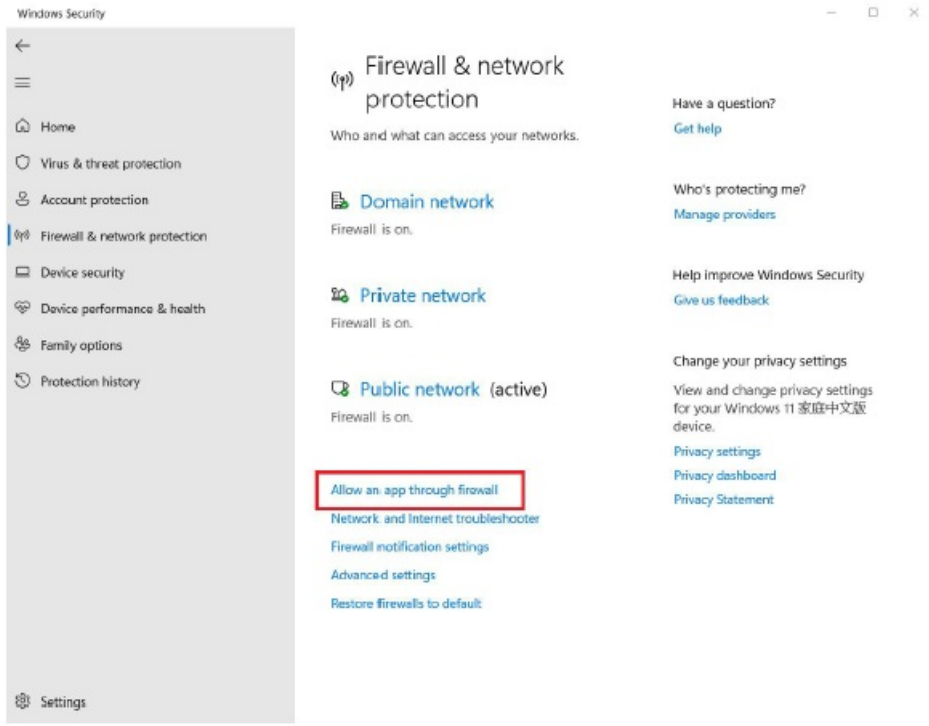
4. Double-click Internet Protocol Version 4(TCP/IPv4) on the Ethernet Properties page. The following page is displayed.

5. On the Internet Protocol Version 4(TCP/IPv4) Properties page, select Use the following IP addresses and set the following parameters: IP Address, Subnet Mask, Default Gateway.

   Note: 100 in the IP Address figure can be other values as long as it does not conflict with 192.168.1.128 in the monitor, but it must be on the same network segment.

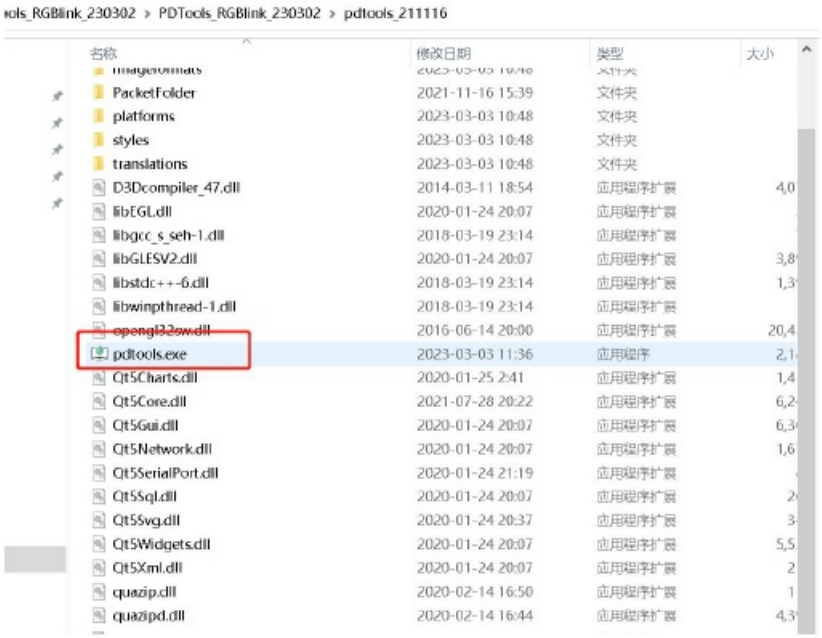


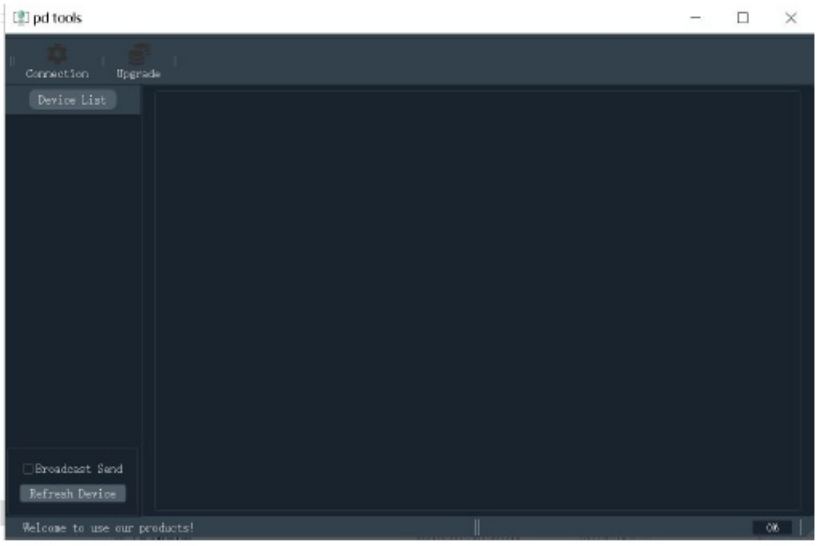
6. Shut down firewall or allow PD Tool through firewall.



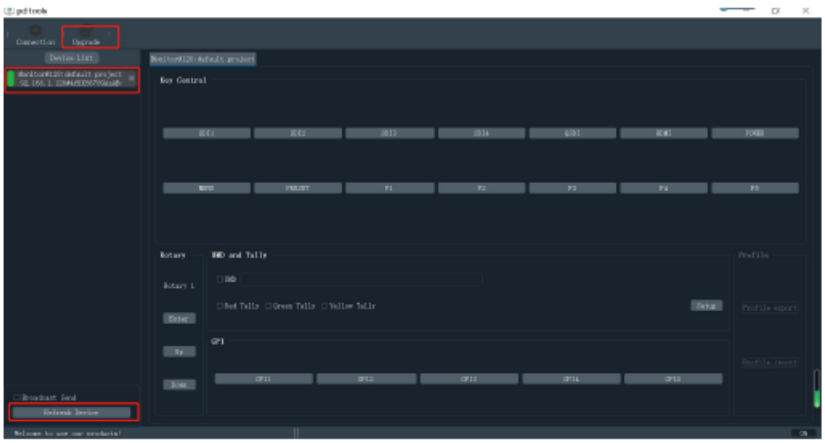
Upgrade monitor program:

1. Double-click pdtools.exe in the pdtools_ folder. The following page is displayed If a firewall is displayed to block the change software, please allow access.



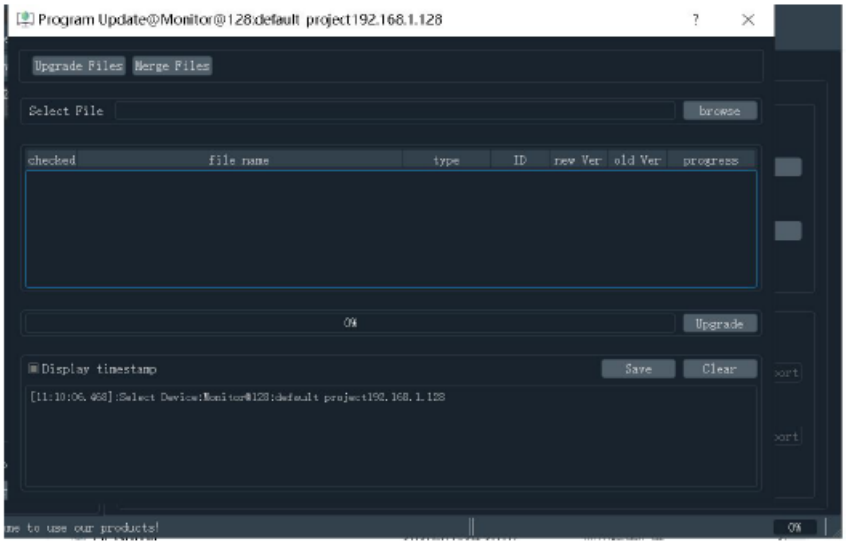


2. Click “Refresh Device” on the interface. If the computer is connected to the monitor normally, the following interface will be displayed.

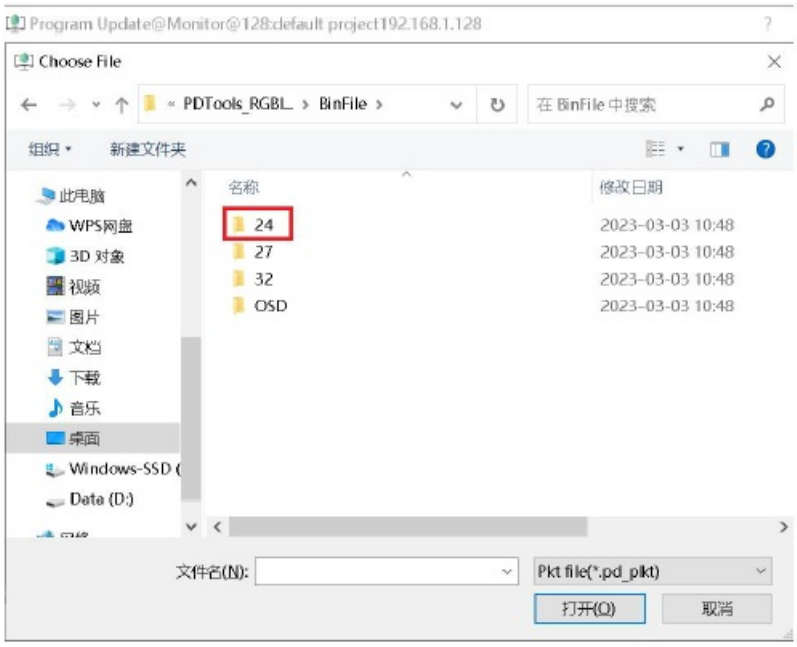


If PD TOOL connection fails, disconnect wifi.

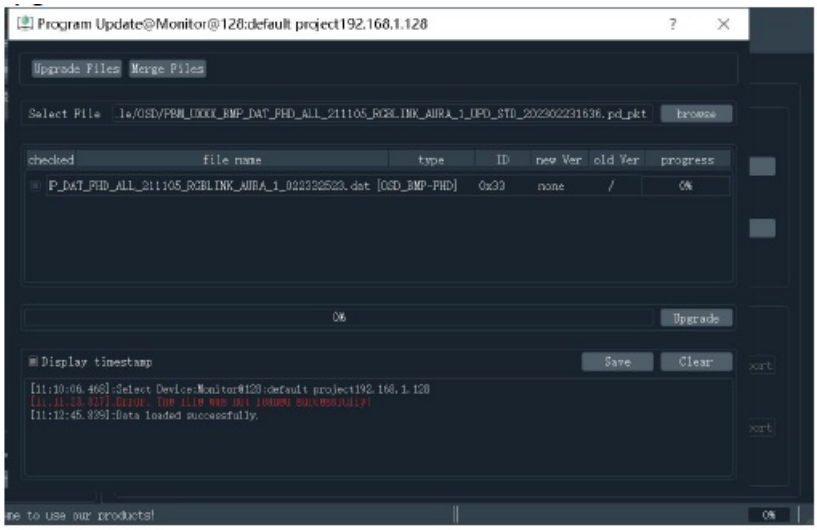
3. Click “Upgrade” in the above interface to display the upgrade interface, as shown in the following figure.



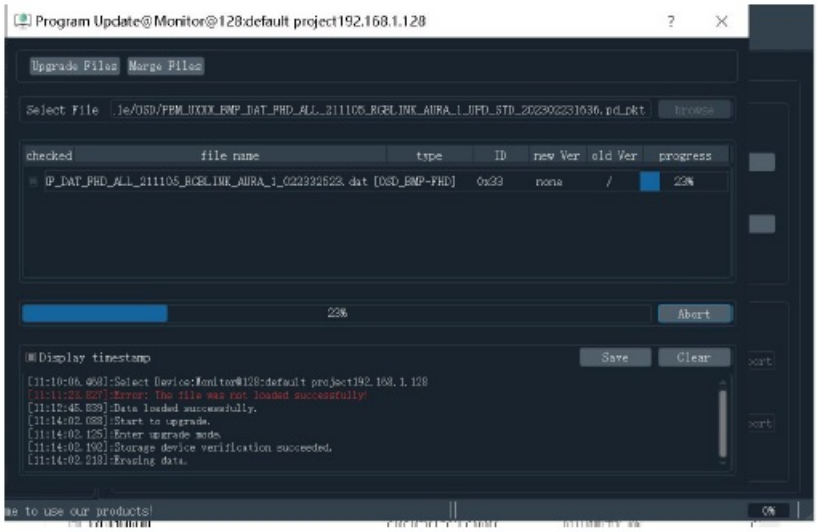
4. Click browse -choose target Bin File.

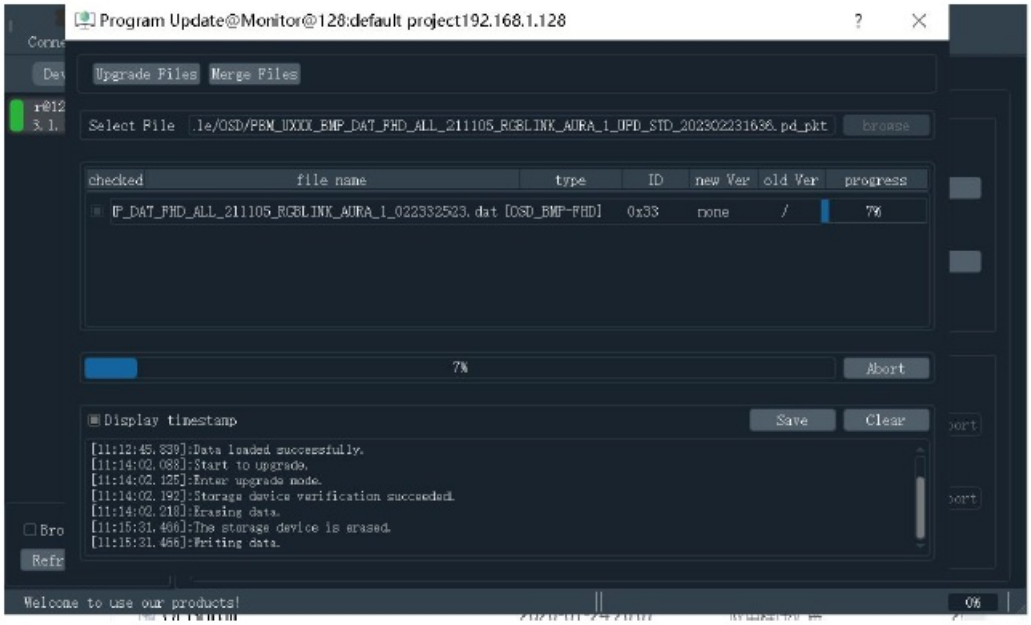


5. Click “Upgrade” on the upgrade interface, as shown below.

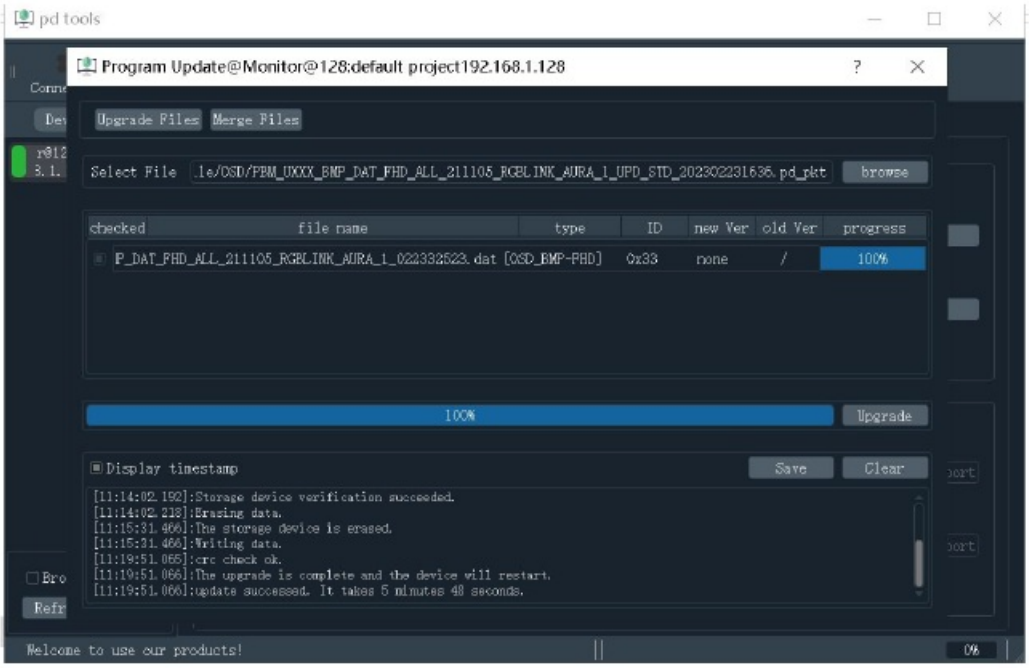


Upgrading.





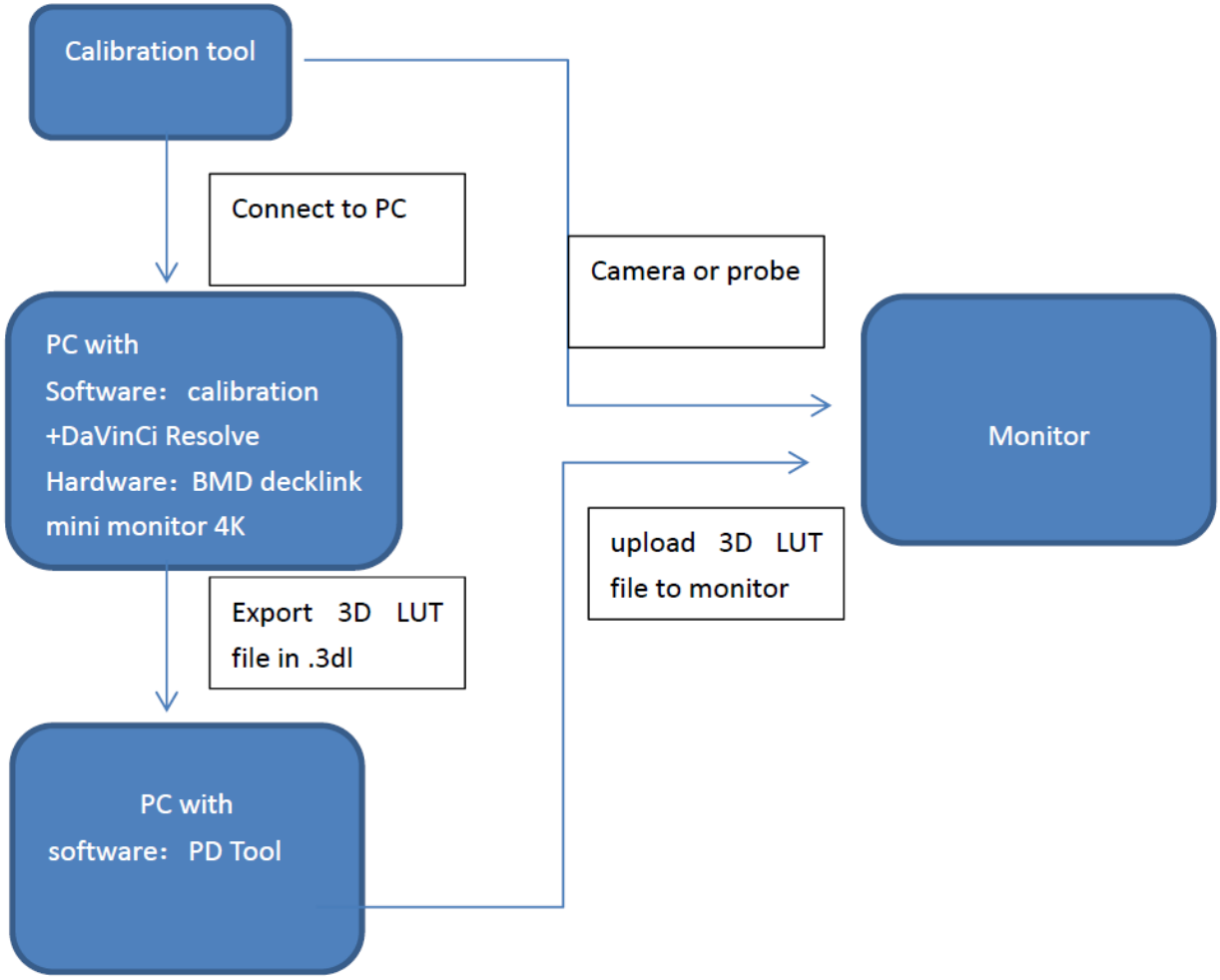
6. Update complete.



How to Calibrate Monitor

Prepare:

1. Calibrate software-installed on PC
2. Calibration tool-connect to the same PC
3. DaVinci Resolve+BMD DeckLink Mini Monitor 4K(or other SDI PCIe output card) –installed on the same PC
4. Monitor

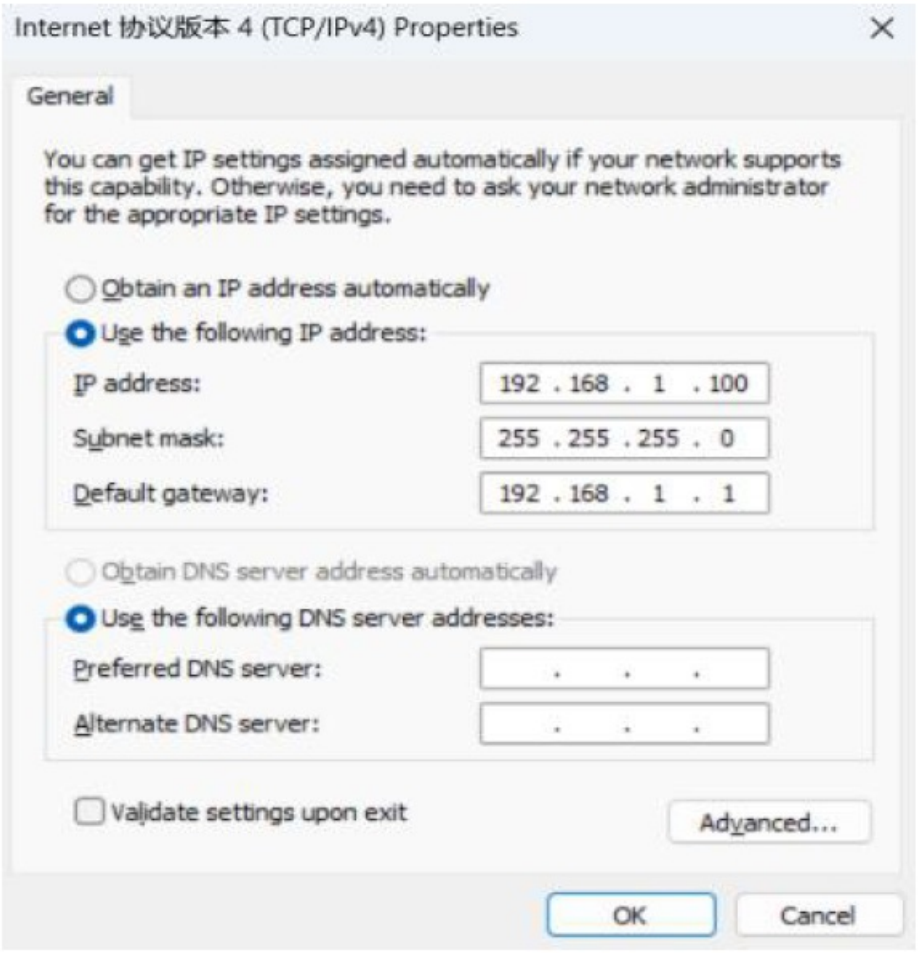


3D LUT File Upload Operating Instructions

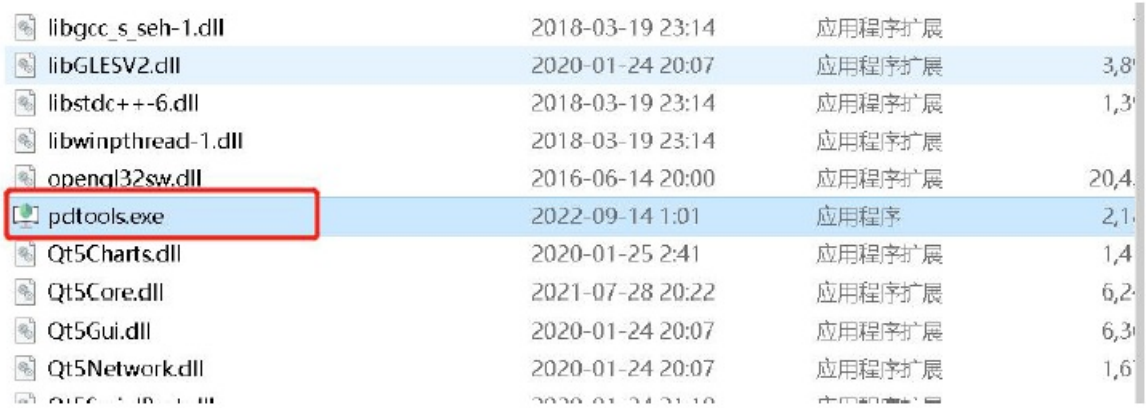
Prepare:
Before upgrade, unzip the PD tool package.

1. Connect the computer and monitor with Ethernet cable (default IP address is 192.168.1.128).

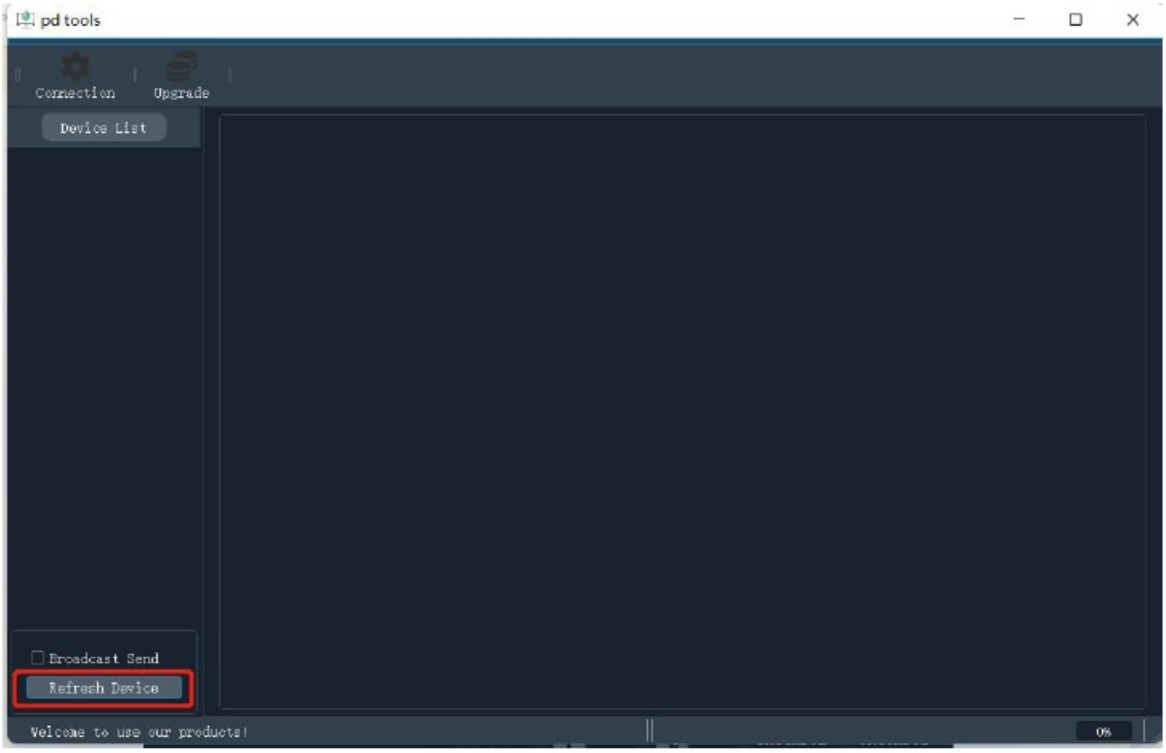
2. Set Ethernet as fixed IP address at the computer, as shown below, in Internet Protocol Version 4 (TCP/IPv4) Properties interface, choose Use the following IP address, fill the IP address, Subnet mask, Default gateway.
   Remark: IP address the 100 can be other values, as long as it does not conflict with 192.168.1.128, but it must on the same network segment.



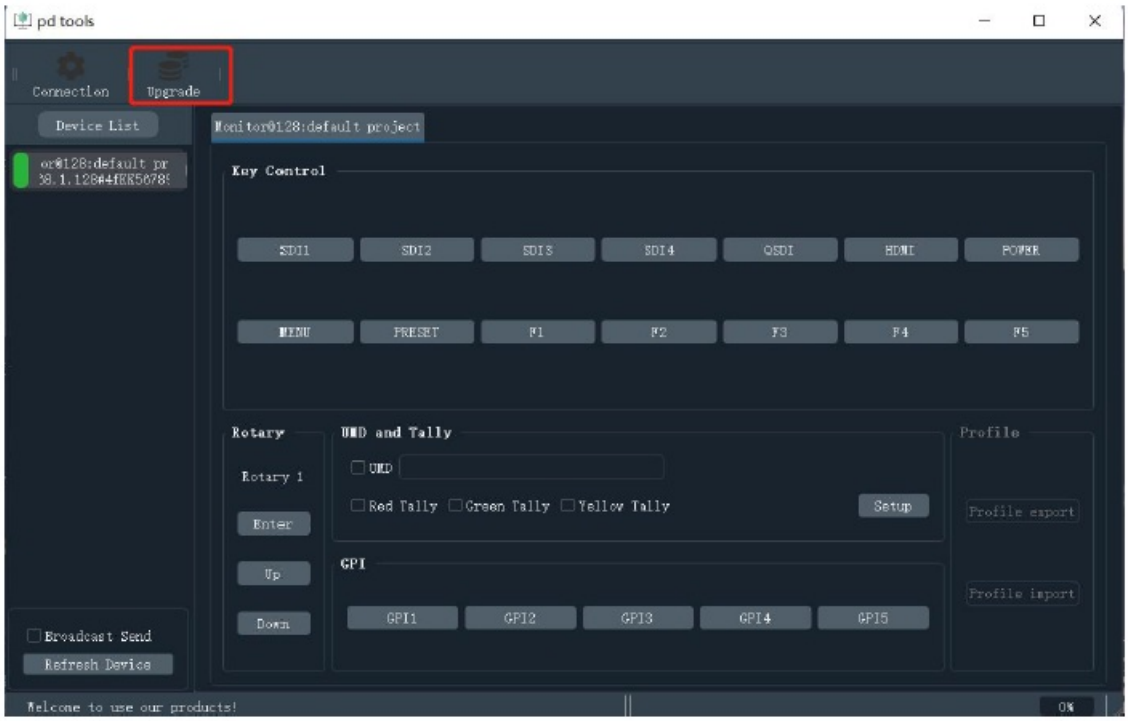
3. Double-click “pdtools.exe” to open the interface as follows. If a firewall pops up to prevent the software from being changed, click “Allow access”.

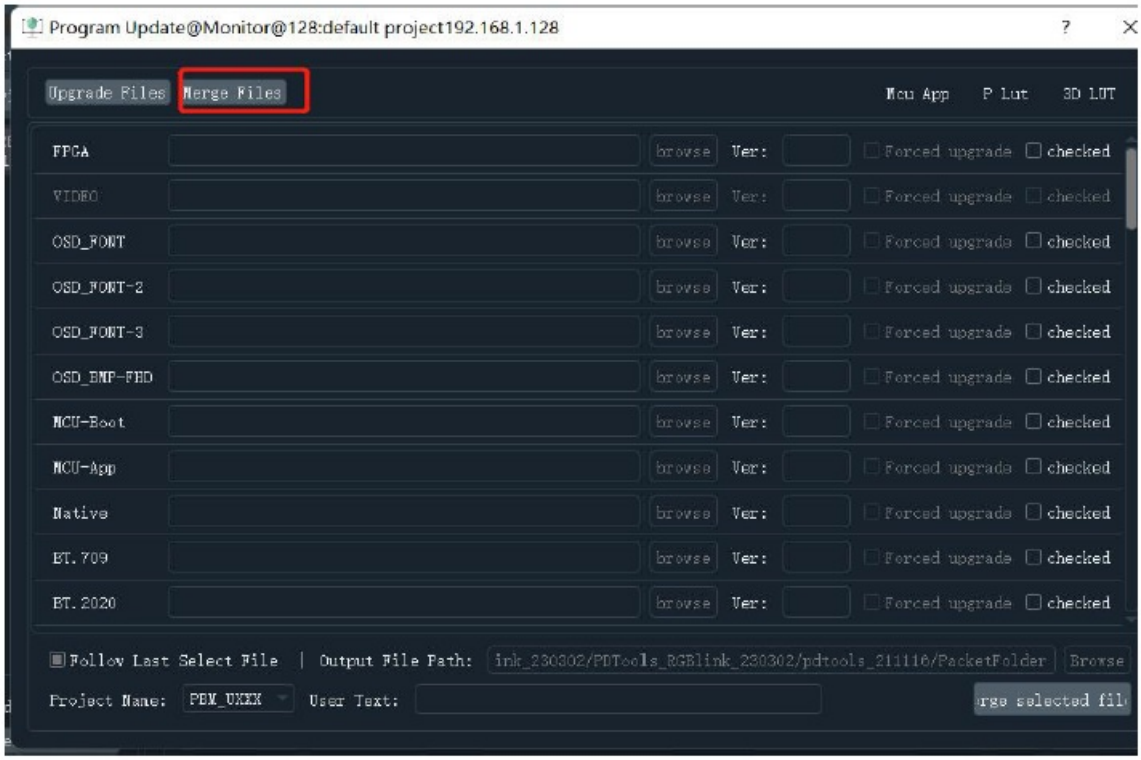


4. Click “Refresh Device” on the interface. If the computer and monitor are connected correctly, will display the following interface.

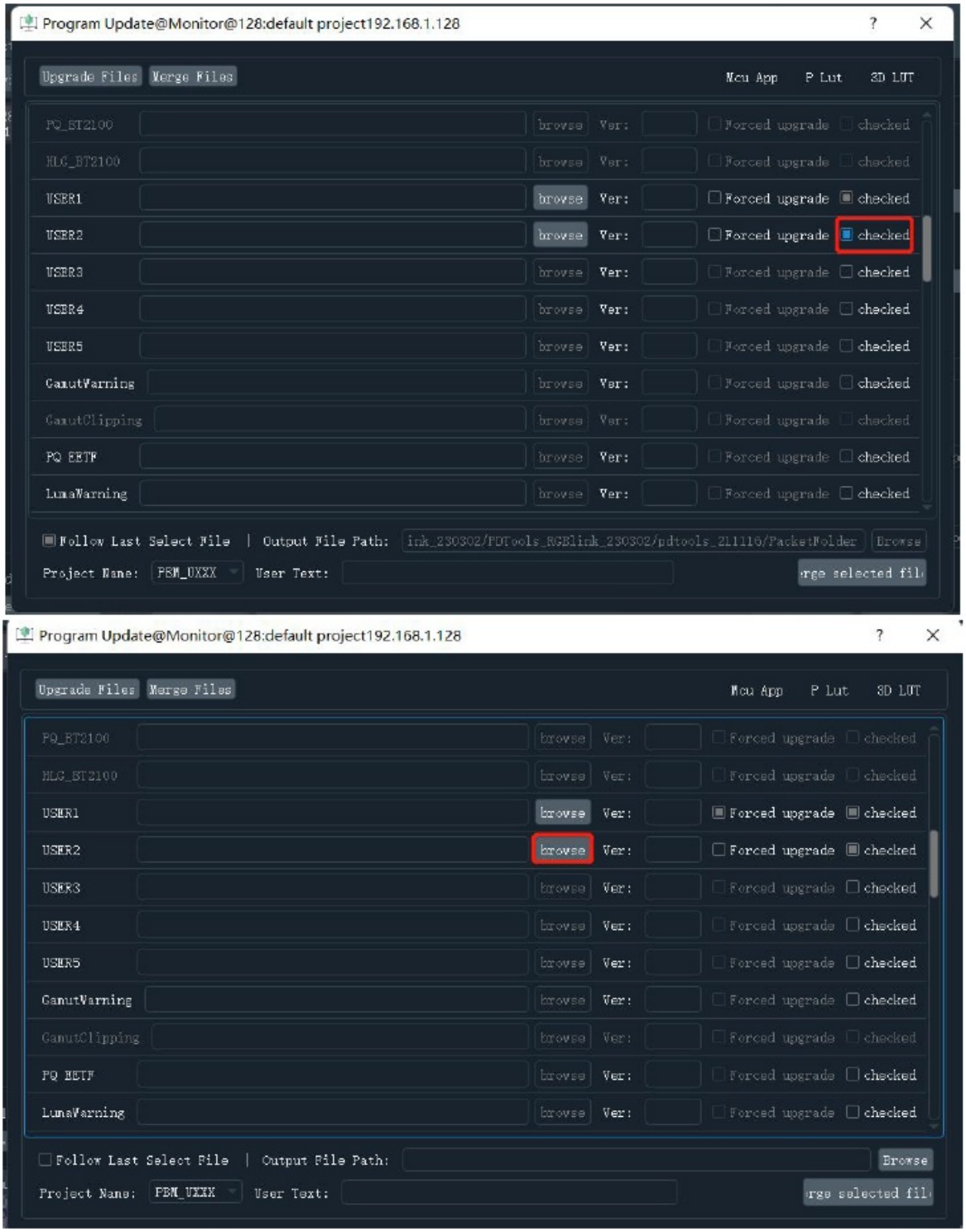


5. Click “Upgrade” in the interface, the pop-up interface is as follows, and click “merge files”.

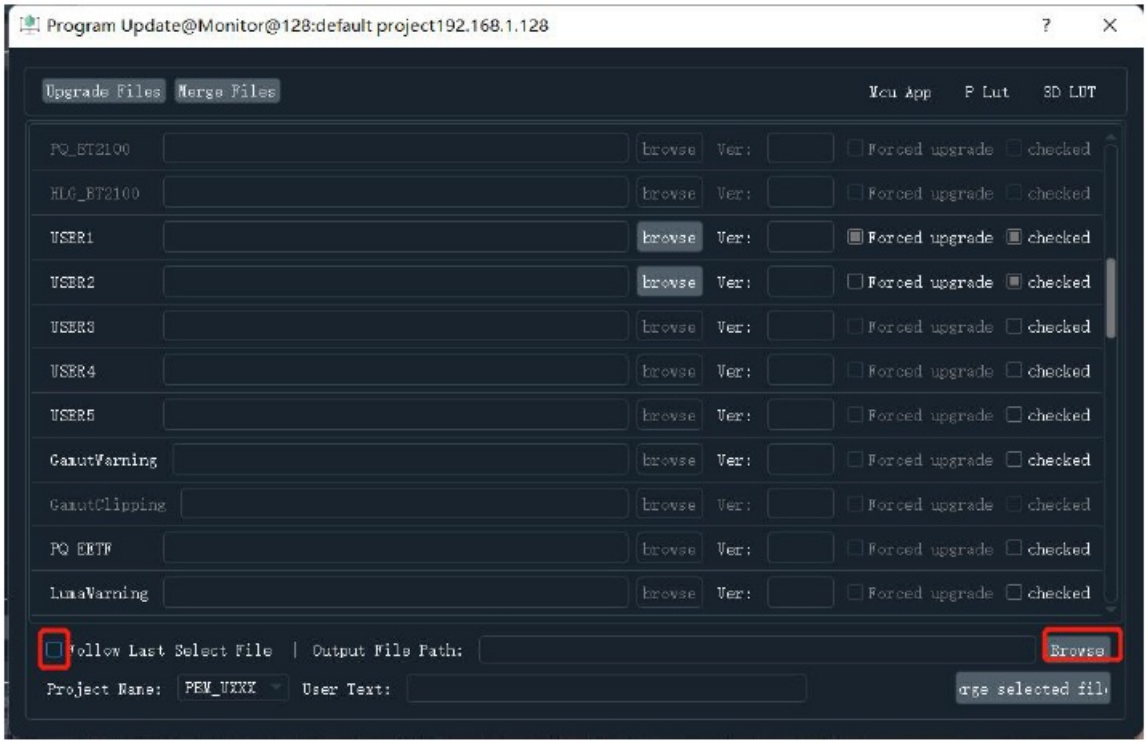




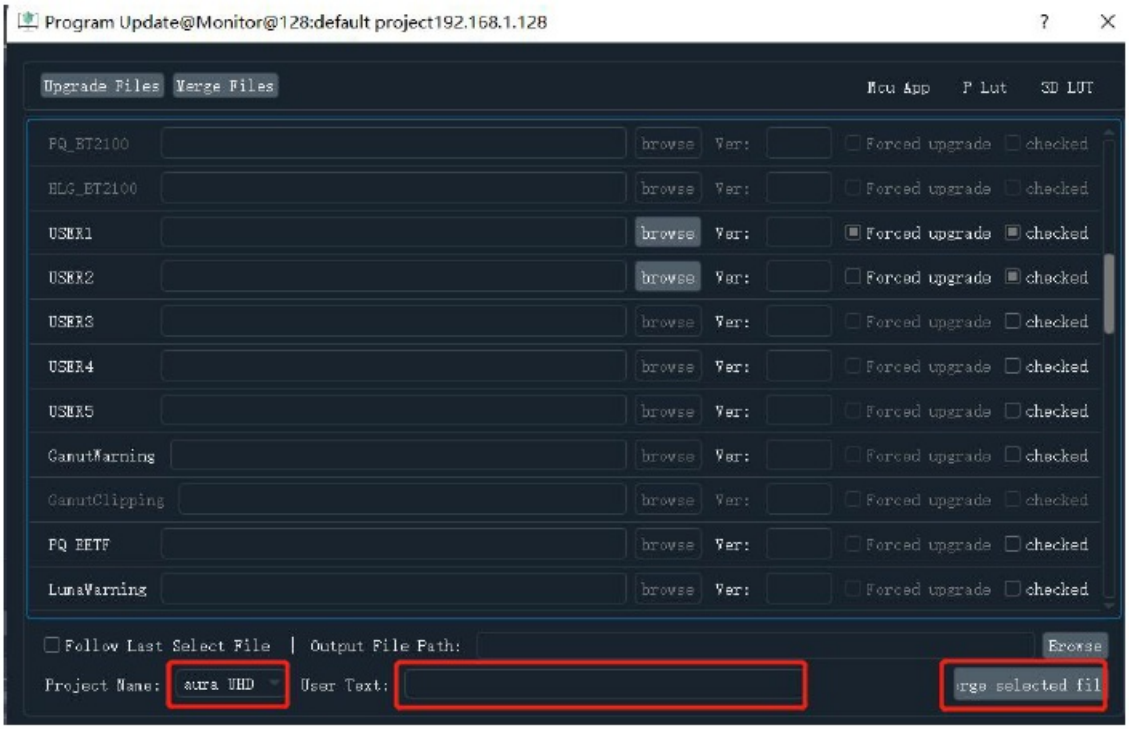
6. Click “Checked” behind USER1/USER2/USER3/USER4/USER5. If you only upgrade USER1 and USER2, you only need to click Select behind USER1 and USER2 to select, and then click “Browse” to select the 3D LUT file to be upgraded, the file should be in .3dl format. Choose 3D LUT.



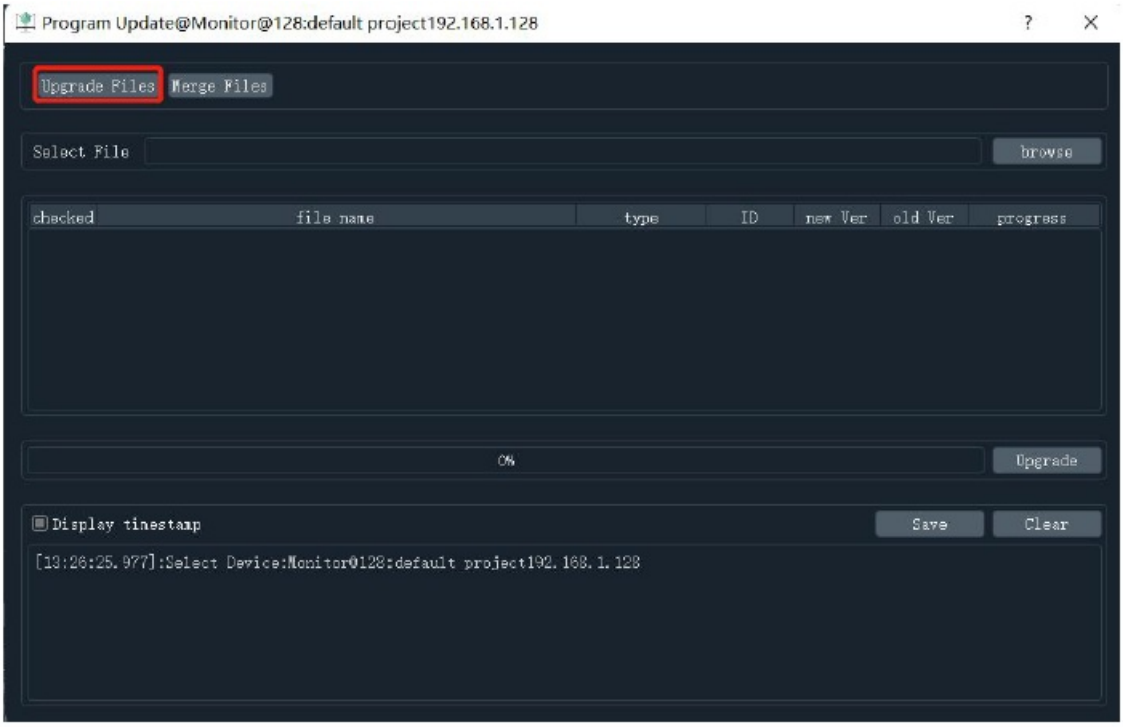
7. Finally, click “Browse” to select location file for merged 3d lut file “Merge Selected Files”.



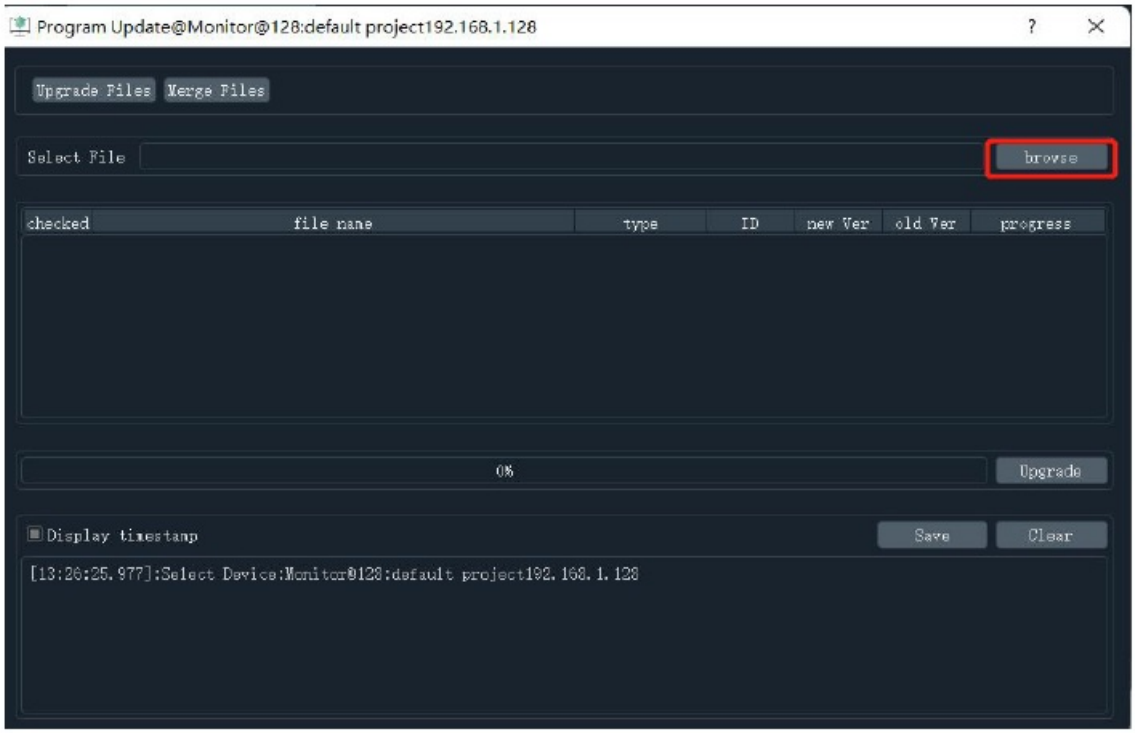
After output path is selected, optionally filling in project name and user text and then click “Merge selected files” . The merged file will be stored in the selected file path.



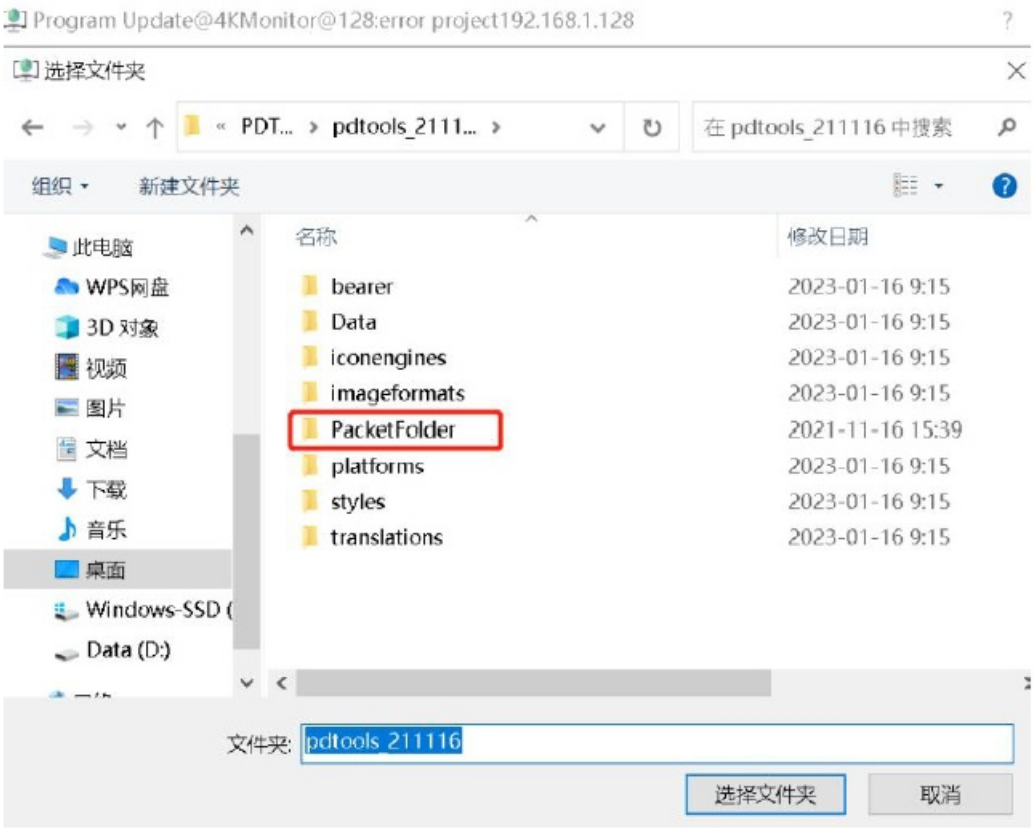
8. Click “Upgrade Files” on the upgrade interface, as shown below.



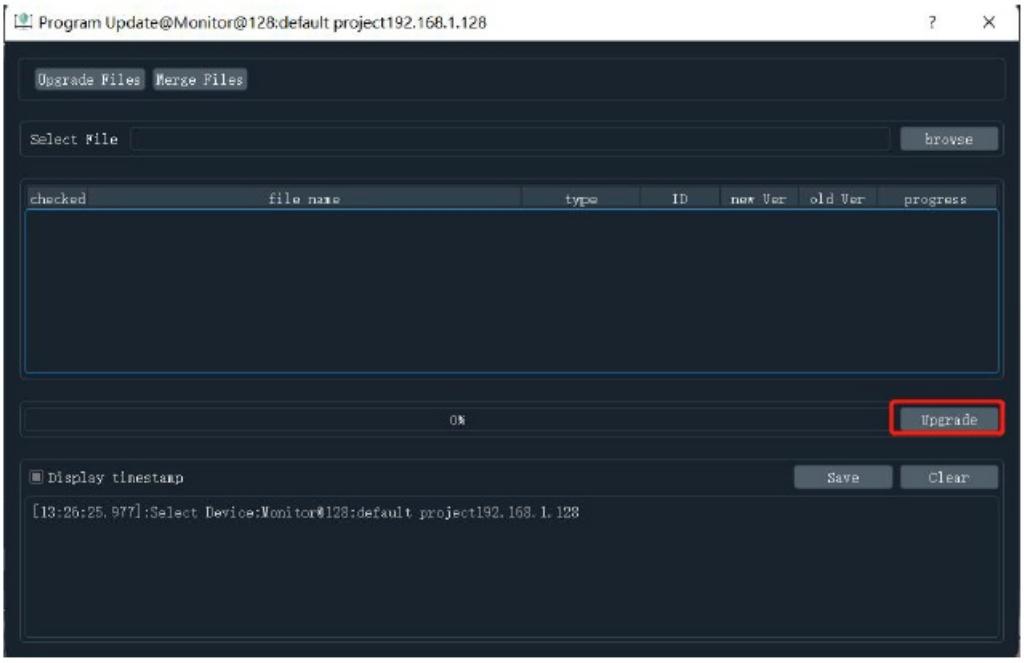
9. Select “browse”.



Select the merged file generated from last step.



Finally, click “Upgrade”.



Disassembly Notes

Step 1: Put the monitor on the protective cotton to prevent scratches, then remove the two screws of the back shell.

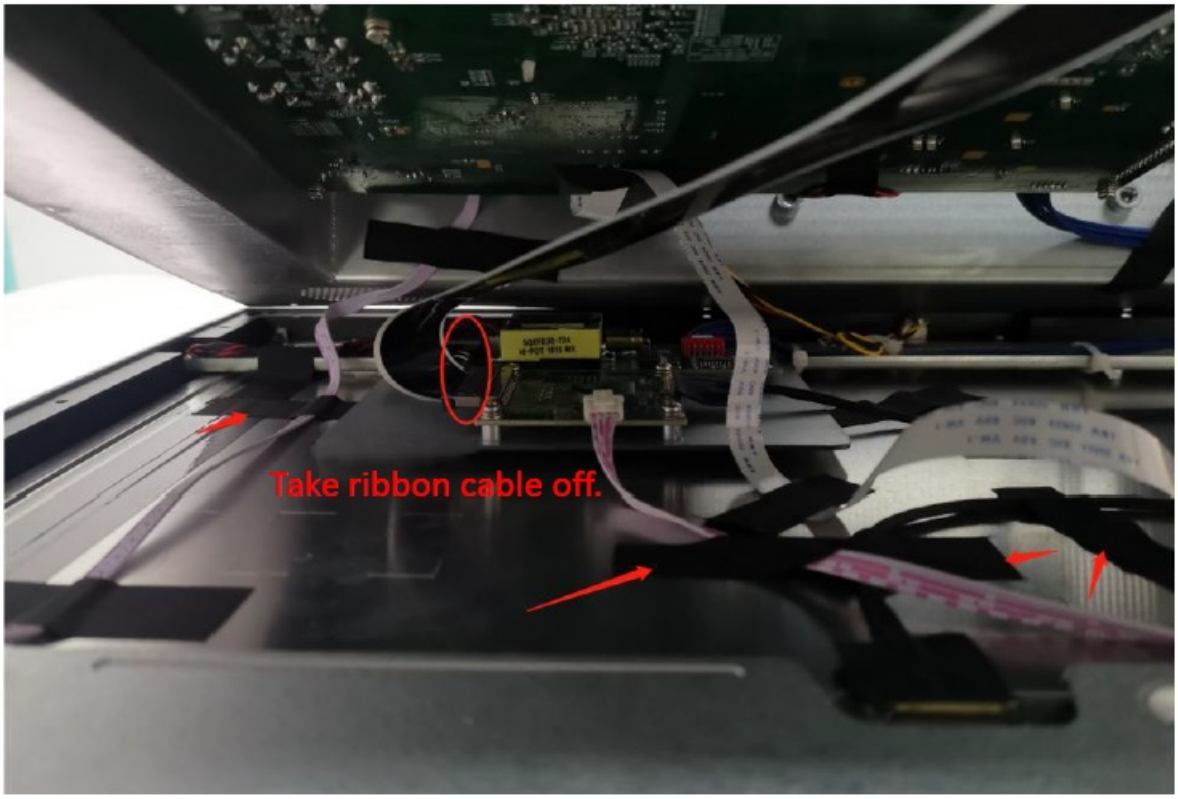
Step 2: Remove 6 fixing screws of the base as shown below.

Step 3: Remove 12 screws of back shell as shown below.

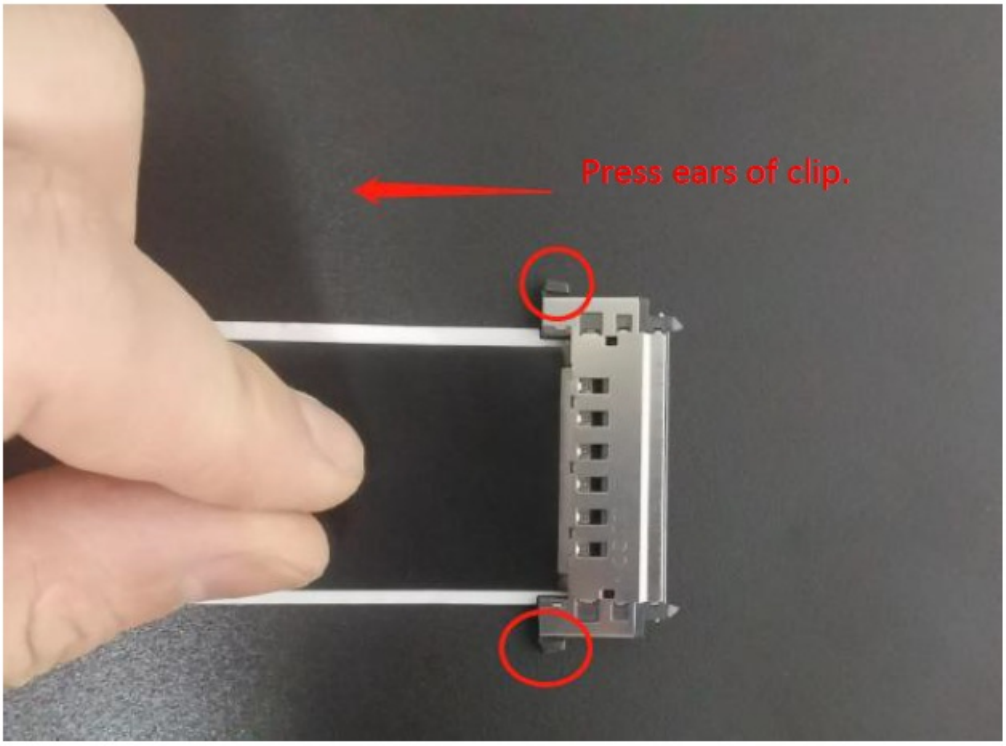
Step 4: Lift the back shell at a small angle. (Note: Please pay attention to the angle to prevent pulling the internal cables.)

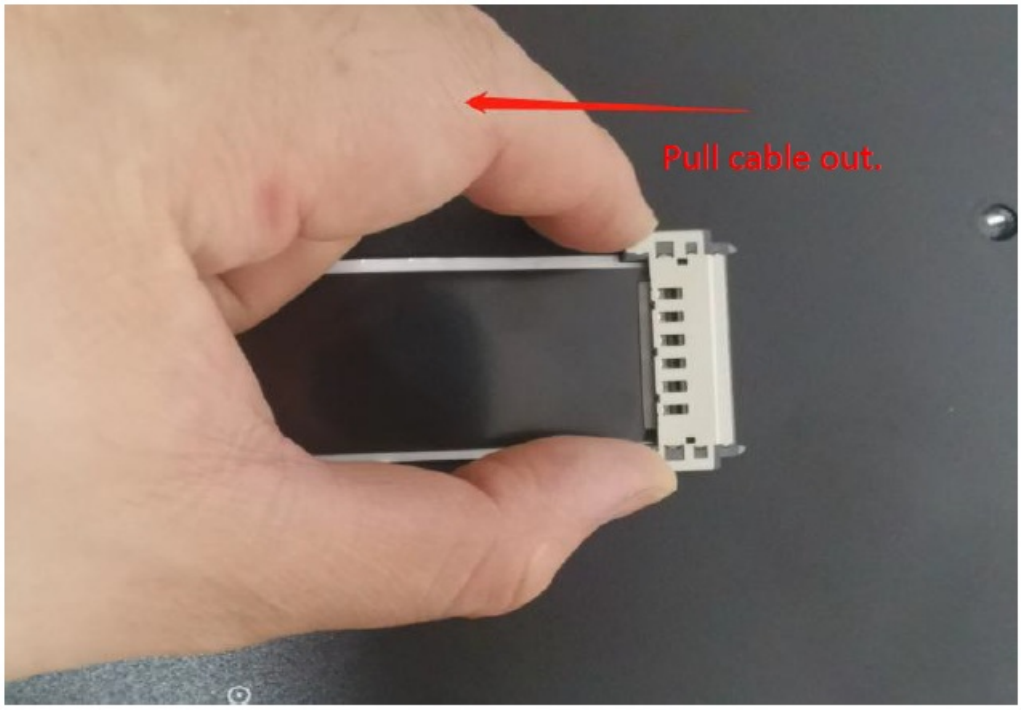
Step 5:
Check whether the internal cables has fallen off or not.

Step 6:
For further disassembly, please remove the ribbon cable (Refer to Step 7 for operating details) and then tear off the tape between the cable and the screen.

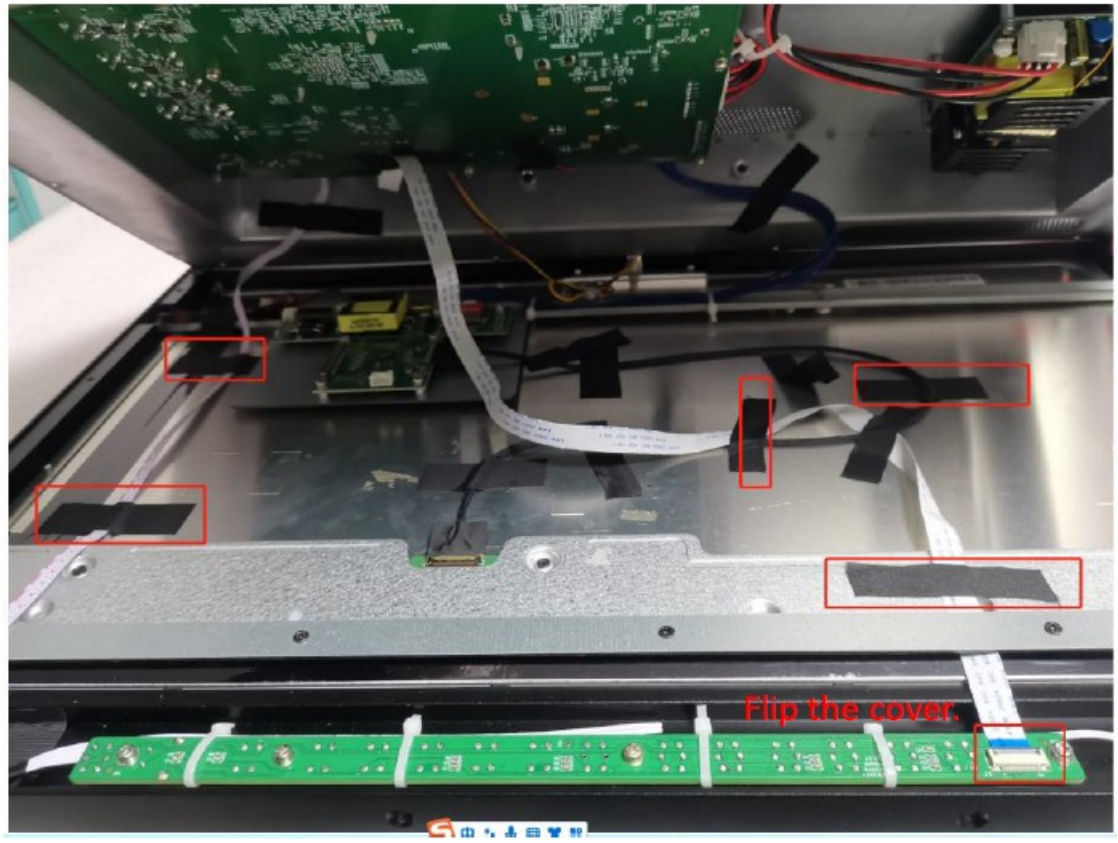


Step 7: Press clips on the side of cable and then pull them out.

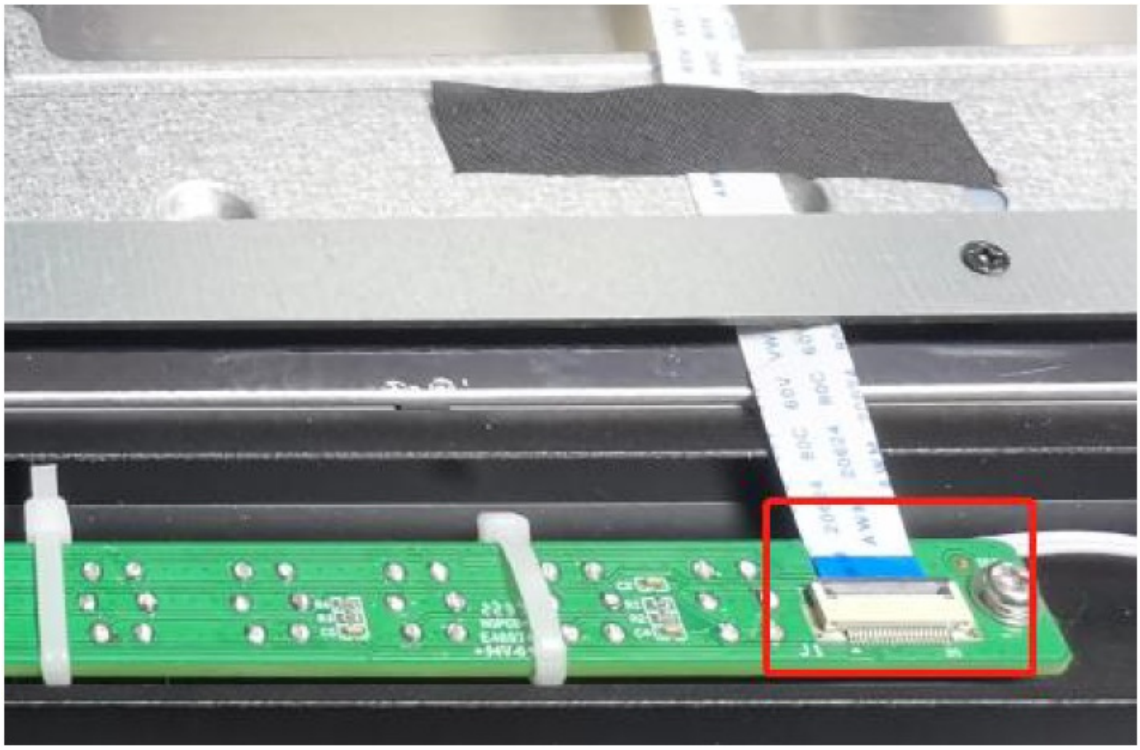




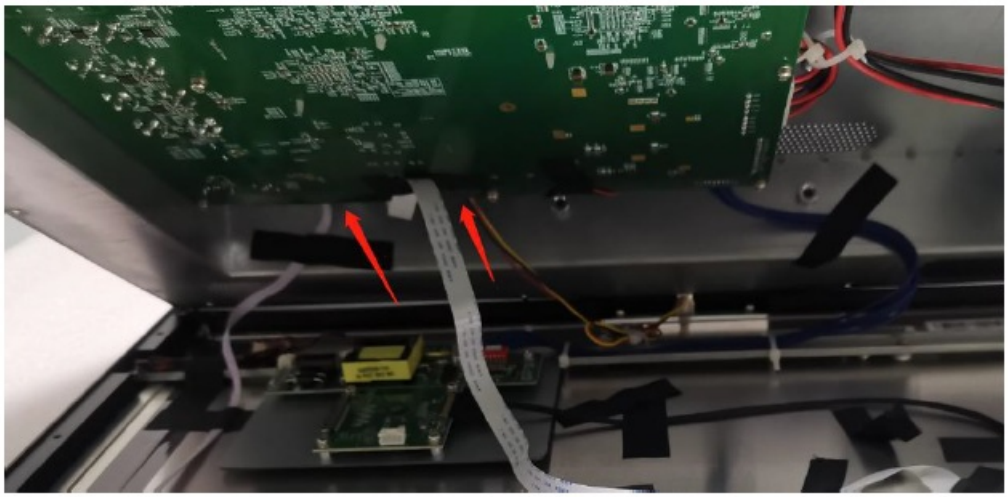
Step 8. Tear off the tape shown below.



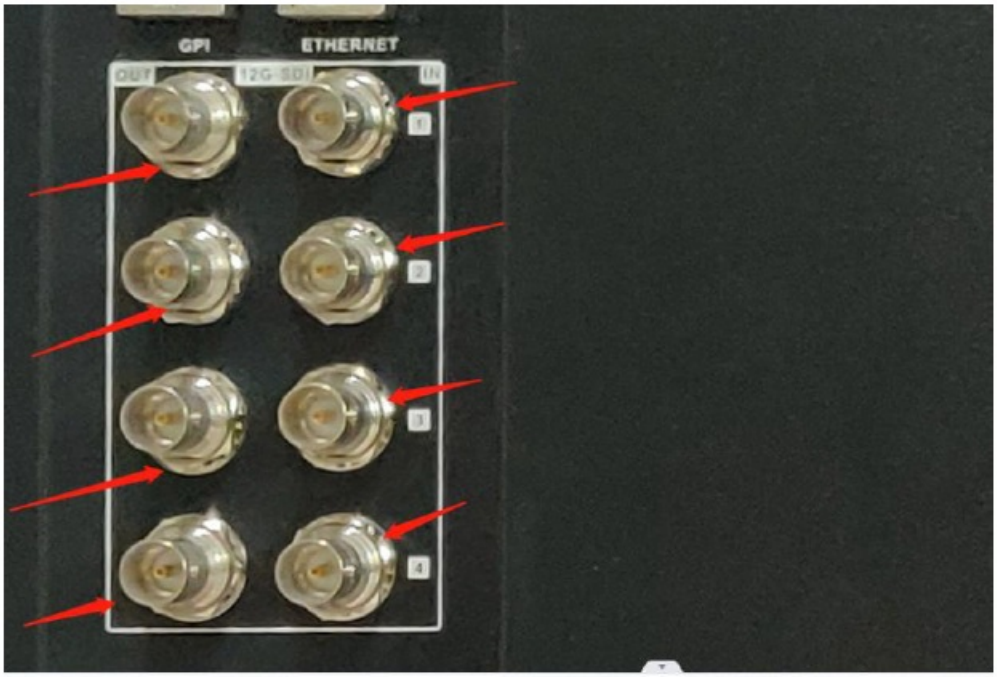
Step 9: Take keyboard cable off.



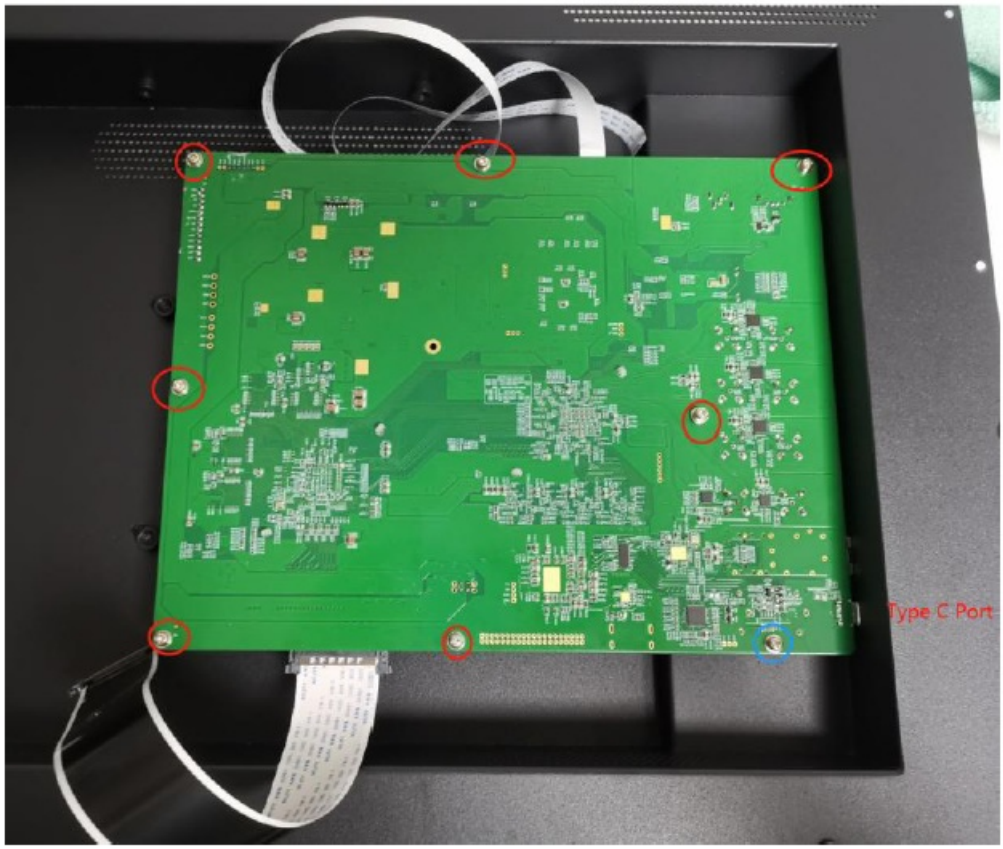
Step 10: Take cables off shown below (Press the clip between cable and motherboard, then pull the cable out.)



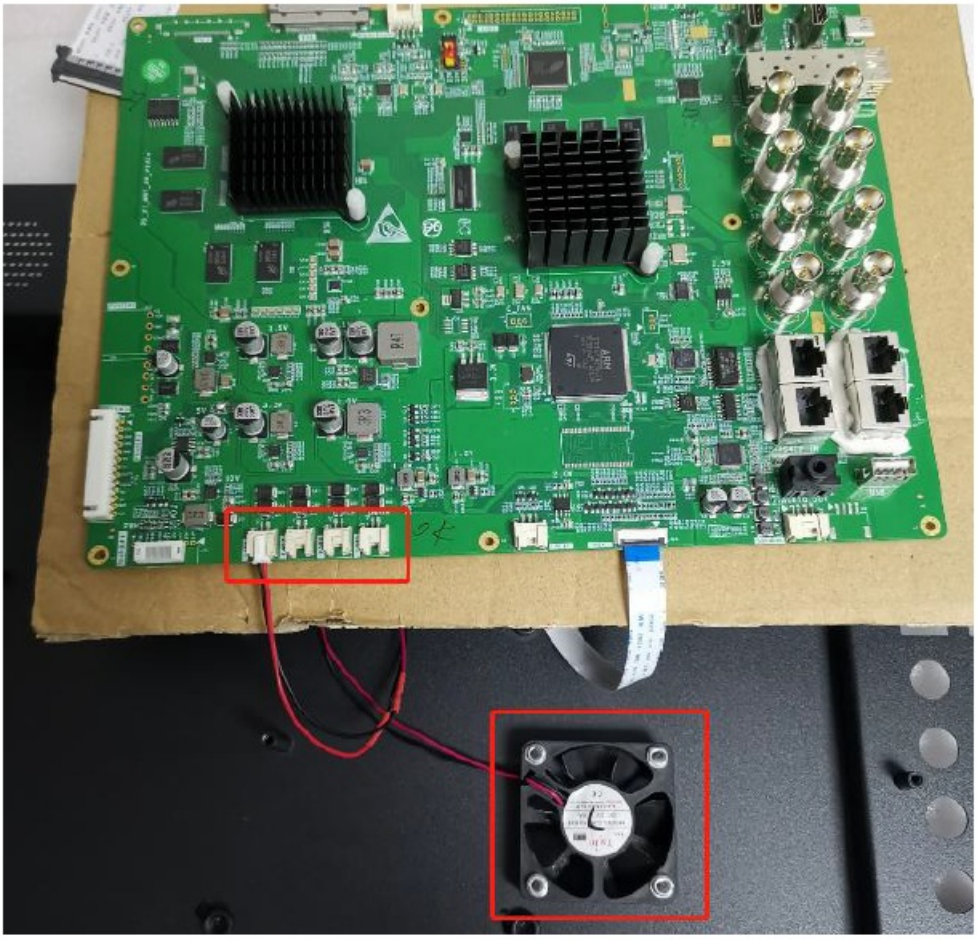
- **Step 11:** Then separate the back shell and the front frame.
- **Step 12:** Remove the nuts on BNC ports in the figure below.



Step 13: Remove the screws on motherboard. Please remember to keep the washer (near Type-C port) under the blue screw for the assembly when removing the motherboard.

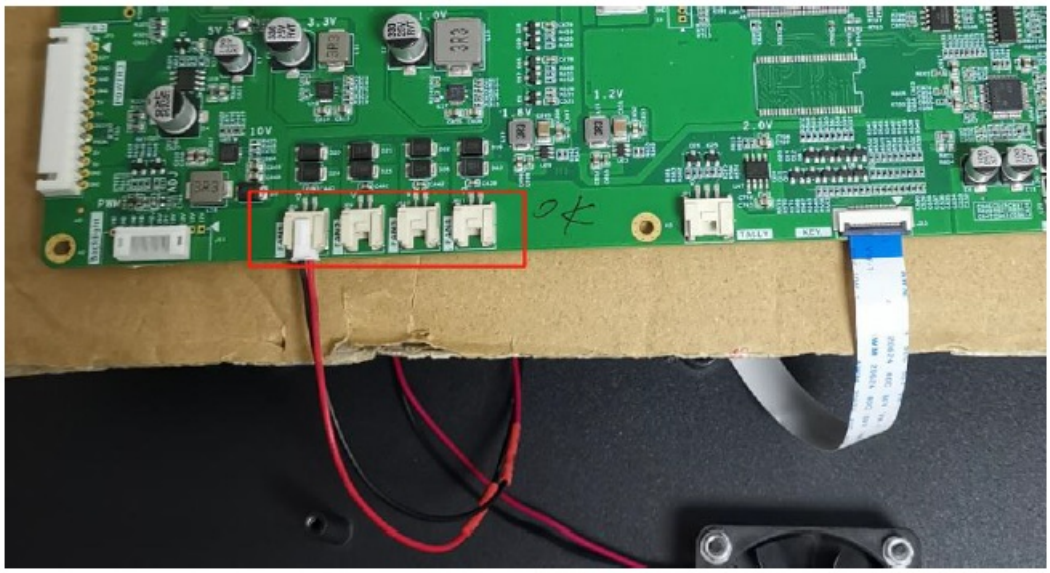


Step 14: Remove the four screws and washers of the fan shown in the figure below, and separate the fan cable from the motherboard.

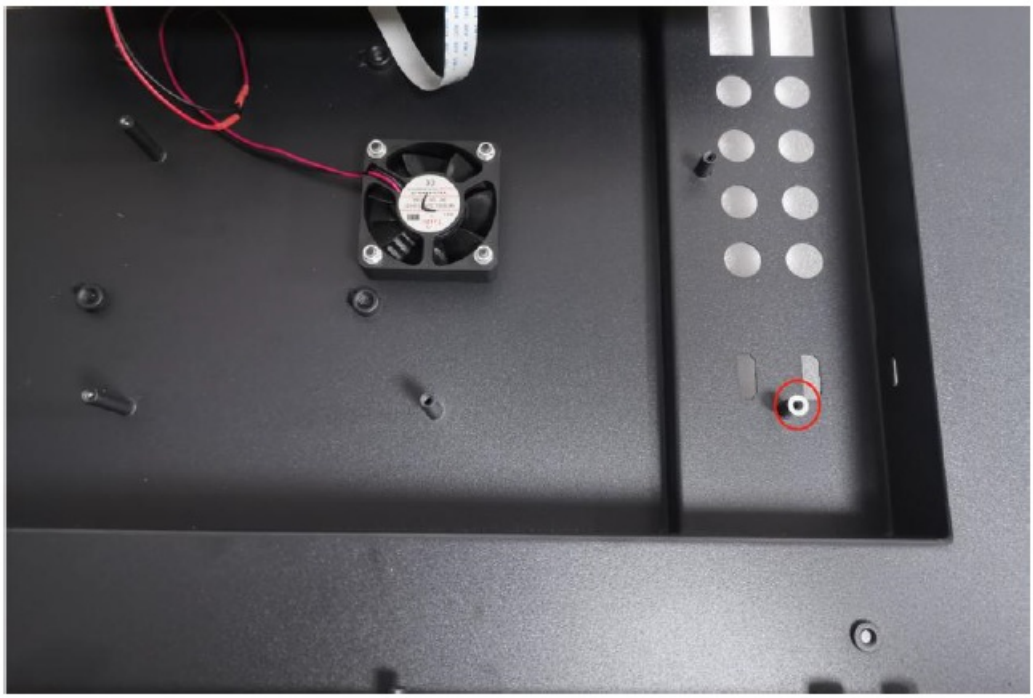


Step 15: Install a new fan with label facing up.

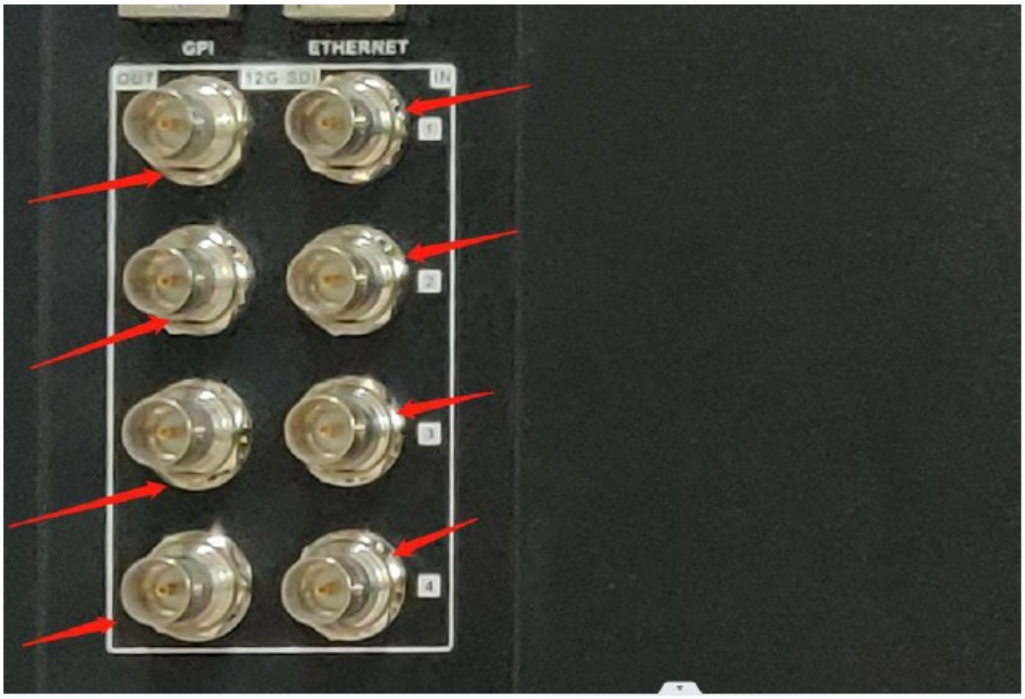
Step 16: Lock the new fan, connect fan cable to FAN 1 connector on the motherboard.



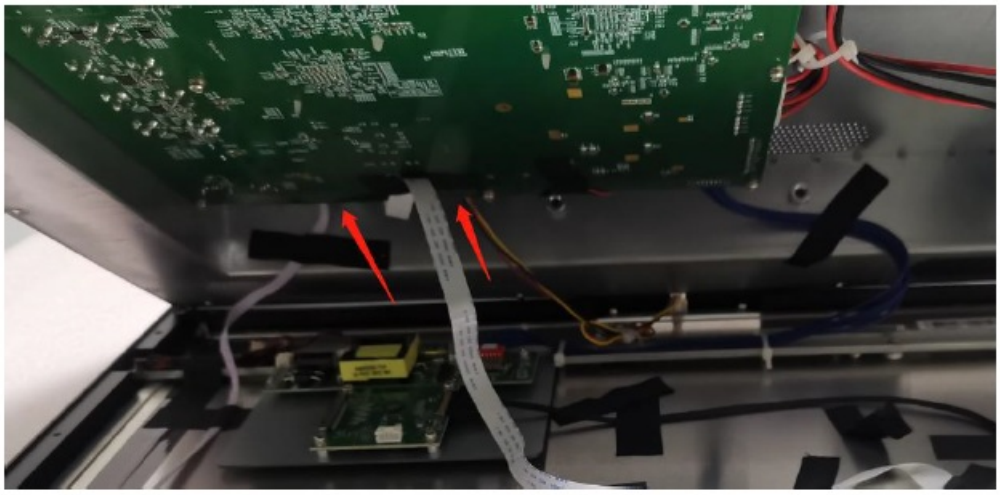
Step 17: After the fan replacement is completed, remember to place the dasher removed on the stub before installing the motherboard back into the back shell. Then place the motherboard, and lock screws to fix.



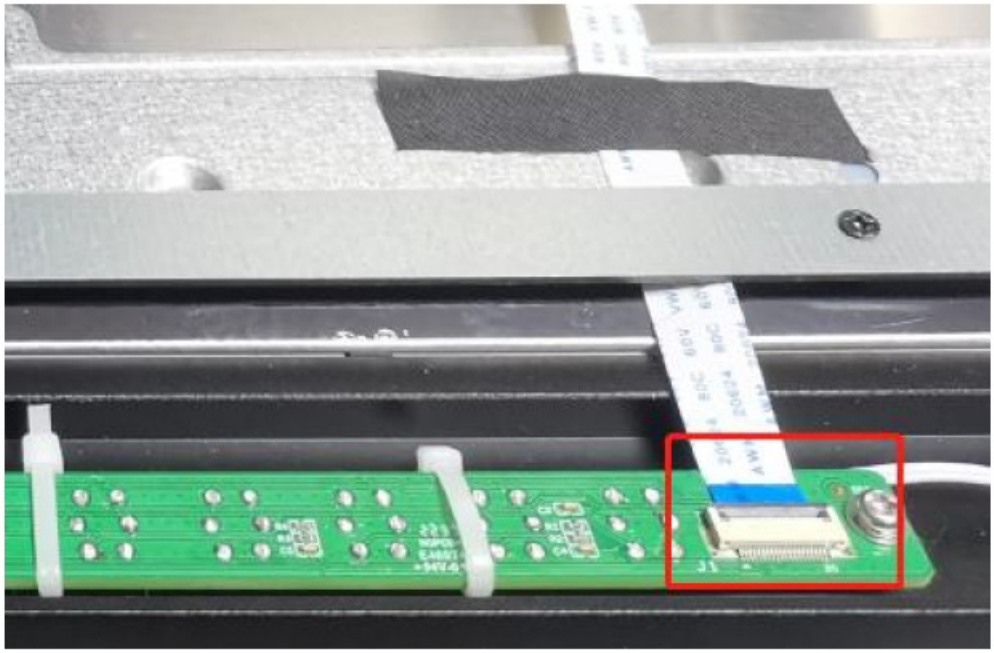
Step 18: Install the BNC nuts removed before.



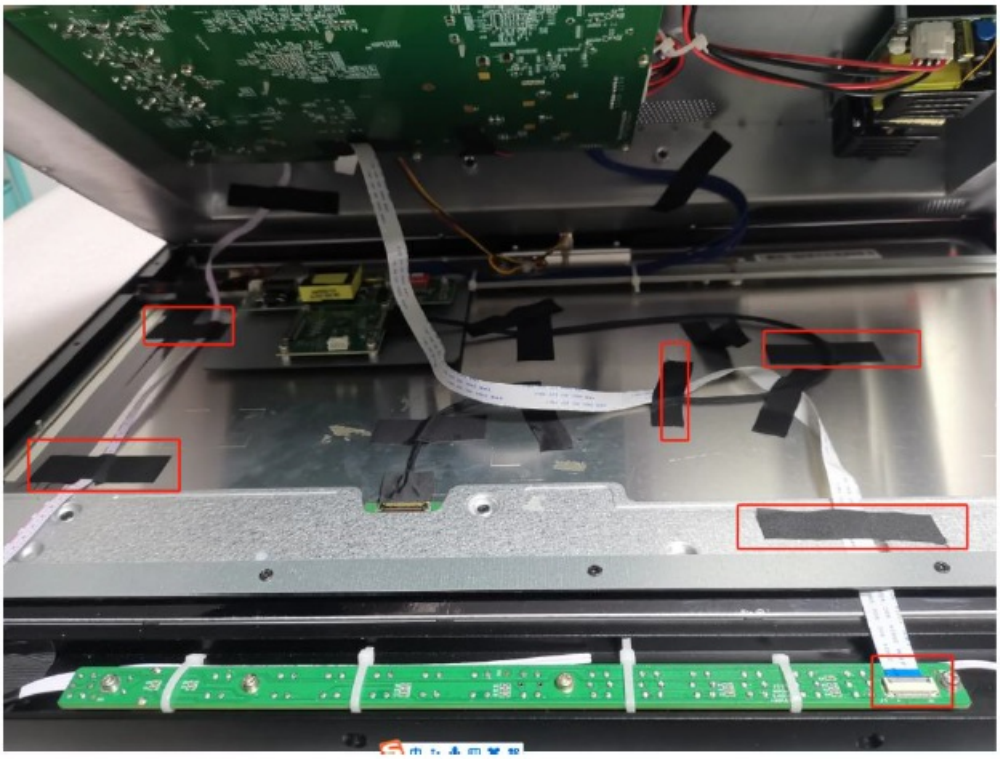
Step 19: Put front shell close to back shell, connect two cables shown as below.



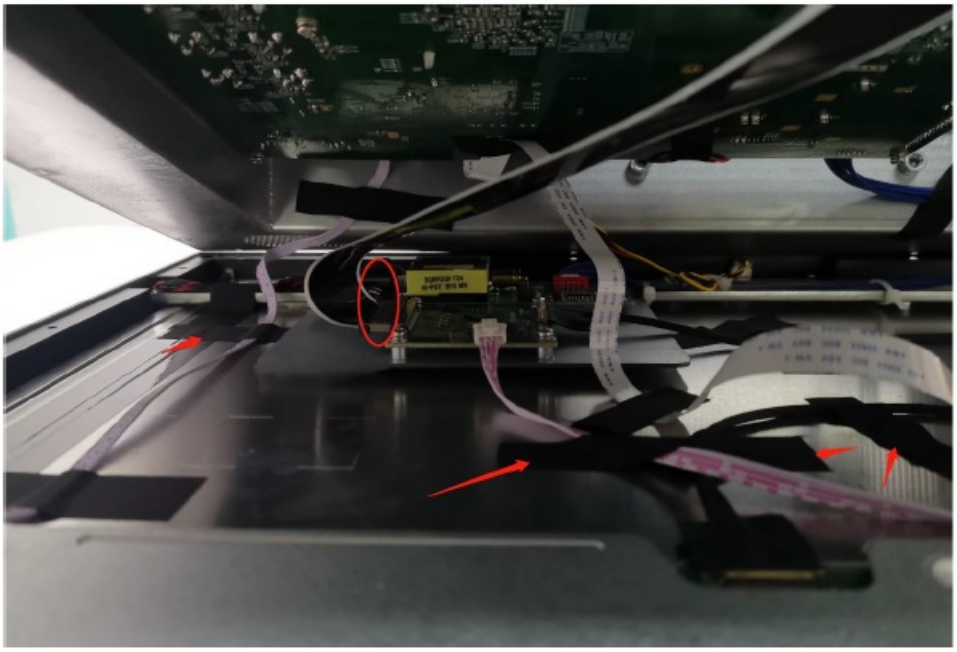
Step 20: Connect the keyboard cable back.



Step 21: Use tape to fix the ribbon cable.



Step 22: Connect the screen cable back.



- **Step 23:** Put front and back shells together.
- **Step 24:** Lock screws to fix.

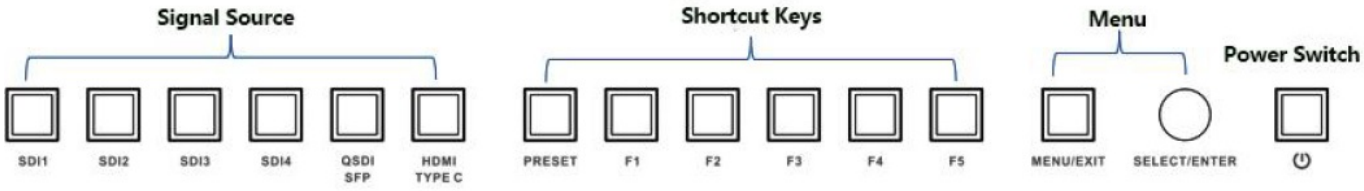
Test Instructions after Installation

Step 1: TALLY Light Test
Switch on 220V power supply to check TALLY status.

- **Normal Status:** TALLY in yellow
- **Abnormal Status:** Unlit/TALLY in red/TALLY in green

Step 2: Signal Button Test
Press SDI1, SDI2, SDI3, SDI4, QSDI, HDMI one-by-one to check if the upper right of the screen displays right signal and the button light is on at the same time.

Step 3: Shortcut Keys Test
Press the PRESET button continuously to check if the prompt menu in the lower right corner of the screen cycles in “F Button Preset-Preset 1~5”.



Step 4: F1~F5 Button Test
Set the PRESET key to “F Button Preset-Preset 2”, then press F1 Button continuously to check if the prompt menu on the right side of the screen switches between OFF/ON. Do same operations to check F2~F5 Button.

Step 5: Menu Button Test
Press the MENU button to open OSD menu. Rotate SELECT/ENTER button to select and press to enter next menu, then press MENU button again to check if the menu returns back to previous level.

Step 6: Power Switch Test
Press and hold the power switch for 4 seconds to turn monitor off, then check if the power switch light is in orange. Press the power button slightly to turn monitor on, then check if the power switch light is in green.

Step 7: SDI Signal Test

- Input active SDI signal to SDI1-IN port, use a SDI cable to connect SDI1-OUT port and SDI2-IN port. Select SDI1 button to check if the screen displays normally, and select SDI2 button to check if the other screen displays normally.
- Input active SDI signal to SDI2-IN port, use a SDI cable to connect SDI2-OUT port and SDI3-IN port. Select SDI2 button to check if the screen displays normally, and select SDI3 button to check if the other screen displays normally.
- Input active SDI signal to SDI3-IN port, use a SDI cable to connect SDI3-OUT port and SDI4-IN port. Select SDI3 button to check if the screen displays normally, and select SDI4 button to check if the other screen displays normally.
- Input active SDI signal to SDI4-IN port, use a SDI cable to connect SDI4-OUT port and SDI1-IN port. Select SDI4 button to check if the screen displays normally, and select SDI1 button to check if the other screen displays normally.

Step 8: HDMI Signal Test

- Input active HDMI signal to HDMI1 port, select HDMI1 button to check if the screen displays normally.
- Input active HDMI signal to HDMI2 port, select HDMI2 button to check if the screen displays normally.

Appendix

Specification

Screen	Model	IPS LCD screen
	Size	23.8 Inch / 27 Inch / 32 Inch
	Resolution	3840 x 2160
	Dot Pitch	0.1369 H ×0.1369 V mm
	Aspect Ratio	16:9 / 4:3 convertible
	Backlight	LED
	Brightness	540 cd/m2, 800 cd/m2, 700 cd/m2
	Contrast	1200:1
	Color Depth	10bits
	Image Processing	12bits
	Response Time	9ms
	View Angle	Pan:178°/ Tilt:178°
Input	12G-SDI	BNC x 4
	HDMI2.0	x 2
	SFP	12G transmission rate
	Type-C(Compatible with Thunderbolt 3)	x 1
Output	12G-SDI	BNC x 4
Audio	Audio De-embedding	Support
	Audio Level Meter	16-way Up to 8 channels can be displayed simultaneously.
	Built-In Speaker	1-way×8Ω /0.5W
	Earphone Monitoring	Stereo mini jack x1
Universal	Network Port x 1	Control/upgrade RJ-45 input
	GPI x 1	GPI1-5 ,RJ-45P
	Serial Port x 2	RS-422 RJ-45P In/Loop
	Input Voltage	AC 100 V to 240 V, 2.8 A to 1.2 A, 50/60 Hz
	Power Consumption	150W (Max) 75W(Average)
	Working Temperature	-10°C to 55°C (14°F to 155° F)
	Storage Temperature	-20-60℃
	Working Humidity	30 -85 , RH

Supported Signal Format

SDI Signal Format

Single Link

Protocol	Resolution	Color Space	Frame Rate	Mode	Division Method
SMPTE-296M	1280×720	4:2:2, YCbCr, 10bit	60P, 60/1.001p, 50p, 30P, 30/1.001p, 25p, 24p, 24/1.001p	//	//
SMPTE-274M	1920×1080	4:2:2, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF 60i, 60/1.001i, 50i	//	//
SMPTE-2048M- 2	2048×1080	4:2:2, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	//	//
SMPTE-274M	1920×1080	4:2:2, YCbCr, 10bit	60p, 60/1.001p, 50p	Level A Level B-DL	//
SMPTE-2048M- 2	2048×1080	4:2:2, YCbCr, 10bit	60p, 60/1.001p, 50p, 48p, 48p/1.001p	Level A Level B-DL	//
SMPTE-296M	1280×720	4:4:4, RGB/RGBA, 10bit 4:4:4, YCbCr/ YCbCrA, 10bit	60P, 60/1.001p, 50p, 30P, 30/1.001p, 25p, 24p, 24/1.001p	Level A	//

SMPTE-274M	1920×1080	4:4:4, RGB/RGBA, 10bit 4:4:4, YCbCr/ YCbCrA, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF 60i, 60/1.001i, 50i	Level A Level B-DL	//
SMPTE-2048M- 2	2048×1080	4:4:4, RGB/RGBA, 10bit 4:4:4, YCbCr/ YCbCrA, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	Level A Level B-DL	//
SMPTE-274M	1920×1080	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF 60i, 60/1.001i, 50i	Level A Level B-DL	//
SMPTE-2048M- 2	2048×1080	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	Level A Level B-DL	//
SMPTE-274M	1920×1080	4:2:2, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF,	Level A Level	//

			24/1.001PsF	B-DL	
			60i, 60/1.001i, 50i		
SMPTE-2048M- 2	2048×1080	4:2:2, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	Level A Level B-DL	//

	2048×1080	4:4:4, XYZ, 12bit	30p, 25p, 24p 30PsF, 25PsF, 24PsF	Level A Level B-DL	//
SMPTE-2036M-1	3840×2160	4:2:2, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	MODE-1	2SI/SQD
SMPTE-2048M-2	4096×2160	4:2:2, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	MODE-1	2SI/SQD
SMPTE-2036M-1	3840×2160	4:2:2, YCbCr, 10bit 4:2:0, YCbCr, 10bit	60p, 60/1.001p, 50p	MODE-1	2SI/SQD
SMPTE-2048M-2	4096×2160	4:2:2, YCbCr, 10bit	60p, 60/1.001p, 50p, 48p, 48p/1.001p	MODE-1	2SI/SQD
SMPTE-2036M-1	3840×2160	4:4:4, RGB, 10bit 4:4:4, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	MODE-1	2SI/SQD
		4:4:4, RGB/RGBA,			
SMPTE-2048M-2	4096×2160	10bit 4:4:4, YCbCr/	30p, 30/1.001p, 25p, 24p, 24/1.001p	MODE-1	2SI/SQD
		YCbCrA, 10bit			
SMPTE-2036M-1	3840×2160	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	MODE-1	2SI/SQD
SMPTE-2048M-2	4096×2160	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	MODE-1	2SI/SQD
SMPTE-2036M-1	3840×2160	4:2:2, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	MODE-1	2SI/SQD

SMPTE-2048 M- 2	4096×2160	4:2:2, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	MODE-1	2SI/SQD
	4096×2160	4:4:4, XYZ, 12bit	30p, 25p, 24p	MODE-1	2SI/SQD

Dual Link

Protocol	Resolution	Color Space	Frame Rate	Mode	Division Method
SMPTE-274M	1920×1080	4:2:2, YCbCr, 10bit	60p, 60/1.001p, 50p	//	//
SMPTE-2048 M- 2	2048×1080	4:2:2, YCbCr, 10bit	60p, 60/1.001p, 50p, 48p, 48p/1.001p	//	//
SMPTE-274M	1920×1080	4:4:4, RGB, 10bit 4:4:4, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24 PsF, 24/1.001PsF	//	//

			60i, 60/1.001i, 50i		
SMPTE-2048 M- 2	2048×1080	4:4:4, RGB, 10bit 4:4:4, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1. 001p 30PsF, 30/1.001PsF, 25PsF, 24 PsF, 24/1.001PsF	//	//
			30p, 30/1.001p, 25p, 24p, 24/1. 001p		
SMPTE-274M	1920×1080	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30PsF, 30/1.001PsF, 25PsF, 24 PsF, 24/1.001PsF	//	//
			60i, 60/1.001i, 50i		
SMPTE-2048 M- 2	2048×1080	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1. 001p 30PsF, 30/1.001PsF, 25PsF, 24 PsF, 24/1.001PsF	//	//
			30p, 30/1.001p, 25p, 24p, 24/1. 001p		
SMPTE-274M	1920×1080	4:2:2, YCbCr, 12bit	30PsF, 30/1.001PsF, 25PsF, 24 PsF,	//	//
			24/1.001PsF		
SMPTE-2048 M- 2	2048×1080	4:2:2, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1. 001p	//	//
	2048×1080	4:4:4, XYZ, 12bit	30p, 25p, 24p 30PsF, 25PsF, 24PsF	//	//

Quad Link

SMPTE 2082-1	7680×4320	4:2:2, YCbCr, 10bit	23.98p,24p,25p,29.97p,30p,50p,59.94 p,60p	//	2SI
SMPTE 2082-10	8192×4320	4:2:2, YCbCr, 10bit	23.98p,24p,25p,29.97p,30p,50p,59.94 p,60p	//	2SI
SMPTE-2036 M- 1	3840×2160	4:2:2, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	//	SQD
SMPTE-2048 M- 2	4096×2160	4:2:2, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p 30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	//	SQD
SMPTE-2036 M- 1	3840×2160	4:2:2, YCbCr, 10bit 4:2:0, YCbCr, 10bit	60p, 60/1.001p, 50p	Level A Level B-DL	2SI/SQD
SMPTE-2048 M- 2	4096×2160	4:2:2, YCbCr, 10bit	60p, 60/1.001p, 50p, 48p, 48p/1.001p	Level A Level B-DL	2SI/SQD
SMPTE-2036 M- 1	3840×2160	4:4:4, RGB, 10bit 4:4:4, YCbCr, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	Level A Level B-DL	2SI/SQD
	3840×2160	4:4:4, RGB, 10bit 4:4:4, YCbCr, 10bit	30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	Level A Level B-DL	SQD

SMPTE-2048 M- 2	4096×2160	4:4:4, RGB/RGBA, 10bit 4:4:4, YCbCr/ YCbCrA, 10bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	Level A Level B-DL	2SI/SQD
	4096×2160	4:4:4, RGB, 10bit 4:4:4, YCbCr, 10bit	30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	Level A Level B-DL	SQD
SMPTE-2036 M- 1	3840×2160	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	Level A Level B-DL	2SI/SQD
	3840×2160	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	Level A Level B-DL	SQD
SMPTE-2048 M- 2	4096×2160	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	Level A Level B-DL	2SI/SQD
	4096×2160	4:4:4, RGB, 12bit 4:4:4, YCbCr, 12bit	30PsF, 30/1.001PsF, 25PsF, 24PsF, 24/1.001PsF	Level A Level B-DL	SQD
SMPTE-2036 M- 1	3840×2160	4:2:2, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	Level A Level B-DL	2SI/SQD
SMPTE-2048 M- 2	4096×2160	4:2:2, YCbCr, 12bit	30p, 30/1.001p, 25p, 24p, 24/1.001p	Level A Level B-DL	2SI/SQD
				Level A	

	4096×2160	4:4:4, XYZ, 12bit	30p, 25p, 24p,	Level	2SI/SQD
				B-DL	
				Level A	
	4096×2160	4:4:4, XYZ, 12bit	30PsF, 25PsF, 24PsF	Level	SQD
				B-DL	

HDMI Signal Format

4096×2160p (60 / 59.94 / 50 / 30 / 29.97 / 25 / 24 / 23.98)
3840×2160p (60 / 59.94 / 50 / 30 / 29.97 / 25 / 24 / 23.98)
1080p (60 / 59.94 / 50 / 30 / 29.97 / 25 / 24 / 23.98)
1080i (60 / 59.94 / 50)
720p (60 / 59.94 / 50)

Terms & Definitions

- **RCA:** Connector used primarily in consumer AV equipment for both audio and video. The RCA connector was developed by the Radio Corporation of America.
- **BNC:** Stands for Bayonet Neill-Concelman. A cable connector used extensively in television (named for its inventors). A cylindrical bayonet connector that operates with a twist-locking motion .
- **CVBS:** CVBS or Composite video, is an analog video signal without audio. Most commonly CVBS is used for transmission of standard definition signals. In consumer applications the connector is typically RCA type, while in professional applications the connector is BNC type.
- **YPbPr:** Used to describe the colour space for progressive-scan. Otherwise known as component video.
- **VGA:** Video Graphics Array. VGA is an analog signal typically used on earlier computers. The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using in mode.
- **DVI:** Digital Visual Interface. The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video.
- **SDI:** Serial Digital Interface. Standard definition video is carried on this 270 Mbps data transfer rate. Video pixels are characterized with a 10-bit depth and 4:2:2 color quantization. Ancillary data is included on this interface and typically includes audio or other metadata. Up to sixteen audio channels can be transmitted. Audio is organised into blocks of 4 stereo pairs. Connector is BNC.
- **HD-SDI:** High-definition serial digital interface (HD-SDI), is standardized in SMPTE 292M this provides a nominal data rate of 1.485 Gbit/s.
- **3G-SDI:** Standardized in SMPTE 424M, consists of a single 2.970 Gbit/s serial link that allows replacing dual link HD-SDI.
- **6G-SDI:** Standardized in SMPTE ST-2081 released in 2015, 6Gbit/s bitrate and able to support 2160p@30.
- **12G-SDI:** Standardized in SMPTE ST-2082 released in 2015, 12Gbit/s bitrate and able to support 2160p@60.
- **U-SDI:** Technology for transmitting large-volume 8K signals over a single cable. a signal interface called the ultra high definition signal/data interface (U-SDI) for transmitting 4K and 8K signals using a single optical cable.

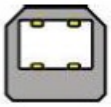
The interface was standardized as the SMPTE ST 2036-4.

- **HDMI:** High Definition Multimedia Interface: An interface used for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable.
- **HDMI 1.3:** Released on June 22 2006, and increased the maximum TMDS clock to 340 MHz (10.2 Gbit/s). Support resolution 1920 × 1080 at 120 Hz or 2560 × 1440 at 60 Hz). It added support for 10 bpc, 12 bpc, and 16 bpc color depth (30, 36, and 48 bit/px), called deep color.
- **HDMI 1.4:** Released on June 5, 2009, added support for 4096 × 2160 at 24 Hz, 3840 × 2160 at 24, 25, and 30 Hz, and 1920 × 1080 at 120 Hz. Compared to HDMI 1.3, 3 more features added which are HDMI Ethernet Channel (HEC), audio return channel (ARC),3D Over HDMI, a new Micro HDMI Connector, an expanded set of color spaces.
- **HDMI 2.0:** Released on September 4, 2013 increases the maximum bandwidth to 18.0 Gbit/s. Other features of HDMI 2.0 include up to 32 audio channels, up to 1536 kHz audio sample frequency, the HE-AAC and DRA audio standards, improved 3D capability, and additional CEC functions.
- **HDMI 2.0a:** Was released on April 8, 2015, and added support for High Dynamic Range (HDR) video with static metadata.
- **HDMI 2.0b:** Was released March, 2016, support for HDR Video transport and extends the static metadata signaling to include Hybrid Log-Gamma (HLG).
- **HDMI 2.1:** Released on November 28, 2017. It adds support for higher resolutions and higher refresh rates, Dynamic HDR including 4K 120 Hz and 8K 120 Hz.
- **DisplayPort:** A VESA standard interface primarily for video, but also for audio, USB and other data. DisplayPort (or DP) is backwards compatible with HDMI, DVI and VGA.
- **DP 1.1:** Was ratified on 2 April 2007, and version 1.1a was ratified on 11 January 2008. DisplayPort 1.1 allow a maximum bandwidth of 10.8 Gbit/s (8.64 Gbit/s data rate) over a standard 4-lane main link, enough to support 1920×1080@60Hz
- **DP 1.2:** Introduced on 7 January 2010, effective bandwidth to 17.28 Gbit/s support increased resolutions, higher refresh rates, and greater color depth, maximum resolution 3840 × 2160@60Hz
- **DP 1.4:** Publish on 1 Mar, 2016.overall transmission bandwidth 32.4 Gbit/s ,DisplayPort 1.4 adds support for Display Stream Compression 1.2 (DSC), DSC is a “visually lossless” encoding technique with up to a 3:1 compression ratio. Using DSC with HBR3 transmission rates, DisplayPort 1.4 can support 8K UHD (7680 × 4320) at 60 Hz or 4K UHD (3840 × 2160) at 120 Hz with 30 bit/px RGB color and HDR. 4K at 60 Hz 30 bit/px RGB/HDR can be achieved without the need for DSC.
- **Multi-mode Fiber:** Fibers that support many propagation paths or transverse modes are called multi-mode fibers, generally have a wider core diameter and are used for short-distance communication links and for applications where high power must be transmitted.
- **Single-mode Fiber:** Fiber that support a single mode are called single-mode fibers. Single-mode fibers are used for most communication links longer than 1,000 meters (3,300 ft).
- **SFP:** Small form-factor pluggable , is a compact, hot-pluggable network interface module used for both telecommunication and data communications applications.
- **Optical Fiber Connector:** Terminates the end of an optical fiber, and enables quicker connection and disconnection than splicing. The connectors mechanically couple and align the cores of fibers so light can pass. 4 most common types of optical fiber connectors are SC, FC, LC,ST.
- **SC:** (Subscriber Connector), also known as the square connector was also created by the Japanese company –Nippon Telegraph and Telephone. SC is a push-pull coupling type of connector and has a 2.5mm diameter.

Nowadays, it is used mostly in single mode fiber optic patch cords, analog, GBIC, and CATV. SC is one of the most popular options, as its simplicity in design comes along with great durability and affordable prices.

- **LC (Lucent** Connector) is a small factor connector (uses only a 1.25mm ferrule diameter) that has a snap coupling mechanism. Because of its small dimensions, it is the perfect fit for high-density connections, XFP, SFP, and SFP+ transceivers.
- **FC:** (Ferrule Connector) is a screw type connector with a 2.5mm ferrule. FC is a round shaped threaded fiber optic connector,mostly used on Datacom, telecom, measurement equipment, single-mode laser.
- **ST:** (Straight Tip) was invented by AT&T and uses a bayonet mount along with a long spring-loaded ferrule to support the fiber.
- **USB:** Universal Serial Bus is a standard that was developed in the mid-1990s that defines cables, connectors and communication protocols. This technology is designed to allow a connection, communication and power supply for peripheral devices and computers.
- **USB 1.1:** Full–Bandwidth USB, specification was the first release to be widely adopted by the consumer market. This specification allowed for a maximum bandwidth of 12Mbps.
- **USB 2.0:** or Hi–Speed USB, specification made many improvements over USB 1.1. The main improvement was an increase in bandwidth to a maximum of 480Mbps.
- **USB 3.2:** Super Speed USB with 3 varieties of 3.2 Gen 1(original name USB 3.0), 3.2Gen 2(original name USB 3.1), 3.2 Gen 2×2 (original name USB 3.2) with speed up to 5Gbps,10Gbps,20Gbps respectively.

USB version and connectors figure:

	Type A	Type B	Mini A	Mini B	Micro-A	Micro -B	Type C
USB 2.0							
USB 3.0							
USB 3.1&3.2							

- **NTSC:** The colour video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. NTSC utilizes an interlaced video signals.
- **PAL:** Phase Alternate Line. A television standard in which the phase of the colour carrier is alternated from line to line. It takes four full images (8 fields) for the colour-to-horizontalimages (8 fields) for the colour-to-horizontal phase relationship to return to the reference point. This alternation helps cancel out phase errors. For this reason, the hue control is not needed on a PAL TV set. PAL, is widely used in needed on a PAL TV set. PAL, is widely used in Western Europe, Australia, Africa, the Middle East, and Micronesia. PAL uses 625-line, 50-field (25 fps) composite colour transmission system.
- **SMPTE:** Society of Motion image and Television Engineers. A global organization, based in the United States,

that sets standards for baseband visual communications. This includes film as well as video and television standards.

- **VESA:** Video Electronics Standards Association. An organization facilitating computer graphics through standards.
- **HDCP:** High-bandwidth Digital Content Protection (HDCP) was developed by Intel Corporation an is in wide use for protection of video during transmission between devices.
- **HDBaseT:** A video standard for the transmission of uncompressed video (HDMI signals) and related features using Cat 5e/Cat6 cabling infrastructure.
- **ST2110:** A SMPTE developed standard, ST2110 describes how to send digital video over and IP networks. Video is transmitted uncompressed with audio and other data in a separate streams.
  SMPTE2110 is intended principally for broadcast production and distribution facilities where quality and flexibility are more important.
- **SDVoE:** Software Defined Video over Ethernet (SDVoE) is a method for transmission, distribution and management AV signals using a TCP/IP Ethernet infrastructure for transport with low latency. SDVoE is commonly used in integration applications.
- **Dante AV:** The Dante protocol was developed for and widely adopted in audio systems for the transmission of uncompressed digital audio on IP based networks. The more recent Dante AV specification includes support for digital video.
- **NDI:** Network Device interface (NDI) is a software standard developed by NewTek to enable video-compatible products to communicate, deliver, and receive broadcast quality video in a high quality, low latency manner that is frame-accurate and suitable for switching in a live production environment over TCP (UDP) Ethernet based networks. NDI is commonly found in broadcastapplications.
- **RTMP:** Real-Time Messaging Protocol (RTMP) was initially a proprietary protocol developed by Macromedia (now Adobe) for streaming audio, video and data over the Internet, between a Flash player and a server.
- **RTSP:** The Real Time Streaming Protocol (RTSP) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers. The protocol is used for establishing and controlling media sessions between end points.
- **MPEG:** Moving Picture Experts Group is a working group formed from ISO and IEC developing standards that allow audio/video digital compression and Transmission.
- **H.264:** Also known as AVC (Advanced Video Coding) or MPEG-4i is a common video compression standard. H.264 was standardized by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC JTC1 Moving Picture Experts Group (MPEG).
- H.265: Also known as HEVC (High Efficiency Video Coding) H.265 is the successor to the widely used H.264/AVC digital video coding standard. Developed under the auspices of ITU, resolutions up to 8192×4320 may be compressed.
- **API:** An Application Programming Interface (API) provides a predefined function which allows access capabilitiesandfeaturesorroutinesviaasoftware or hardware, without accessing source code or understanding the details of inner working mechanism. AnAPI call may execute a function and/or provide datafeedback/report.
- **DMX512:** The communication standard developed by USITT for entertainment and digital lighting systems.The wide adoption of the Digital Multiplex (DMX) protocol has seen the protocol used for a wide range of other devices including video controllers. DMX512 is delivered over cable of 2 twisted pairs with 5pin XLR cables for connection.
- **ArtNet:** An ethernet protocol based on TCP/IP protocol stack, mainly used in entertainment/events

applications. Built on the DMX512 data format, ArtNet enables multiple “ universes ” of DMX512 to be transmitted using ethernet networks for transport.

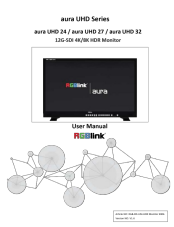
- **MIDI:** MIDI is the abbreviation of Musical Instrument Digital Interface. As the name indicates the protocol was developed for communication between electronical musical instruments and latterly computers. MIDI instructions are triggers or commands sent over twisted pair cables, typically using 5pin DIN connectors.
- **OSC:** The principle of Open Sound Control (OSC) protocol is for networking sound synthesizers, computers, and multimedia devices for musical performance or show control. As with XML and JSON, the OSC protocol allows sharing data. OSC is transported via UDP packets between devices connected on an Ethernet.
- **Brightness:** Usually refers to the amount or intensity of video light produced on a screen without regard to colour. Sometimes called black level.
- **Contrast Ratio:** The ratio of the high light output level divided by the low light output level. In theory, the contrast ratio of the television system should be at least 100:1, if not 300:1. In reality, there are several limitations. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.
- **Colour Temperature:** The colour quality, expressed in degrees Kelvin (K), of a light source. The higher the colour temperature, the bluer the light. The lower the temperature, the redder the light. Benchmark colour temperature for the A/V industryinclude 5000°K, 6500°K,and 9000°K.
- **Saturation:** Chroma, Chroma gain. The intensity of the colour, or the extent to which a given colour in any image is free from white. The less white in a colour, the truer the colour or the greater its saturation. Saturation is the amount of pigment in a colour, and not the intensity.
- **Gamma:** The light output of a CRT is not linear with respect to the voltage input. The difference between what you should have and what is actually output is known as gamma.
- **Frame:** In interlaced video, a frame is one complete image.A video frame is made up of two fields, or two sets of interlaced lines. In a film, a frame is one still image of a series that makes up a motion image.
- **Genlock:** Allows synchronisation of otherwise video devices. A signal generator provides a signal pulses which connected devices can reference. Also see Black Burst and Color Burst.
- **Blackburst:** The video waveform without the video elements.It includes the vertical sync, horizontal sync, and the Chroma burst information. Blackburst is used to synchronize video equipment to align the video output.
- **ColourBurst:** In colour TV systems, a burst of subcarrier frequency located on the back part of the composite video signal. This serves as a colour synchronizing signal to establish a frequency and phase reference for the Chroma signal. Colour burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.
- **Colour Bars:** A standard test pattern of several basic colours (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly used colour bars are the SMPTE standard colour bars. In PAL video, the most commonly used colour bars are eight full field bars. On computer monitors the most commonly used colour bars are two rows of reversed colour bars
- **Seamless Switching:** A feature found on many video switchers. This feature causes the switcher to wait until the vertical interval to switch. This avoids a glitch (temporary scrambling) which often is seen when switching between sources.
- **Scaling:** A conversion of a video or computer graphic signal from a starting resolution to a new resolution. Scaling from one resolution to another is typically done to optimize the signal for input to an image processor, transmission path or to improve its quality when presented on a particular display.
- **PIP:** Picture-In-Picture. A small image within a larger image created by scaling down one of image to make it smaller. Other forms of PIP displays include Picture-By-Picture (PBP) and Picture- With-Picture (PWP), which are commonly used with 16:9 aspect display devices. PBP and PWP image formats require a separate scaler for each video window .

- **HDR:** is a high dynamic range (HDR) technique used in imaging and photography to reproduce a greater dynamic range of luminosity than what is possible with standard digital imaging or photographic techniques. The aim is to present a similar range of luminance to that experienced through the human visual system.
- **UHD:** Standing for Ultra High Definition and comprising 4K and 8K television standards with a16:9 ratio, UHD follows the 2K HDTV standard. A UHD 4K display hasaphysical resolution of3840x2160 which is four times the area and twice both the widthandheightofaHDTV/FullHD(1920×1080) video signal.
- **EDID:** Extended Display Identification Data. EDID is a data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device. The source device will then output the provided EDID data, ensuring proper video image quality.

Revision History
The table below lists the changes to the User Manual.

Format	Time	ECO#	Description	Principal
V1.0	2022-12-21	0000#	Release	Aster
V1.1	2023-01-29	0001#	Add upgrade guidance	Aster
V1.2	2023-02-23	0002#	Revise product pictures	Aster
V1.3	2023-04-10	0003#	Add disassembly notes	Aster
V1.4	2023-05-09	0004#	Add test instructions	Aster
V1.5	2023-05-22	0005#	Update network upgrade program description	Aster
V1.6	2023-08-17	0008#	Add fan replacement operations in Disassembly Notes	Aster

Documents / Resources

	aura UHD 24 Series Monitor [pdf] User Manual UHD 24 Series Monitor, UHD 24 Series, Monitor

References

- W 8K resolution - Wikipedia
- W Data communication - Wikipedia
- W Color depth - Wikipedia
- W Digital imaging - Wikipedia
- W Dynamic range - Wikipedia
- W Dynamic Resolution Adaptation - Wikipedia
- W Fiber cable termination - Wikipedia
- W Hertz - Wikipedia
- W High dynamic range - Wikipedia
- W High-dynamic-range television - Wikipedia
- W High-Efficiency Advanced Audio Coding - Wikipedia
- W Hot swapping - Wikipedia
- W Hybrid log–gamma - Wikipedia
- W Luminance - Wikipedia
- W Luminosity - Wikipedia
- W Mechanical splice - Wikipedia
- W Multi-mode optical fiber - Wikipedia
- W Optical fiber - Wikipedia
- W Photography - Wikipedia
- W Single-mode optical fiber - Wikipedia
- W SMPTE 292 - Wikipedia
- W SMPTE 424M - Wikipedia
- W Telecommunications - Wikipedia
- W Transverse mode - Wikipedia
- W Visual system - Wikipedia