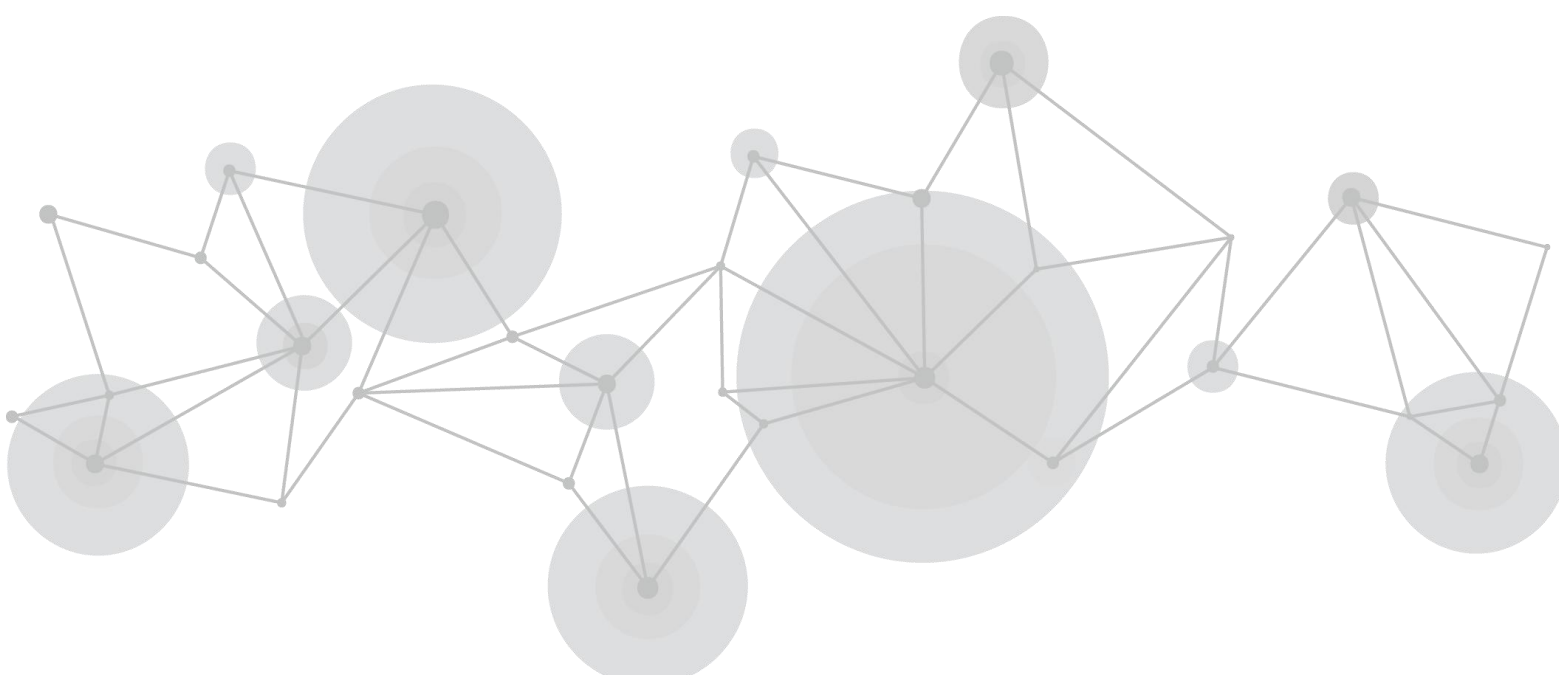


# D2



## USER MANUAL

**RGBlink**<sup>®</sup>



Article No: RGB-RD-UM-D2 E011  
Revision No: V2.1

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**Thank you for choosing our product!**

**This User Manual is designed to show you how to use this video processor 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**

RGBlink provides 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. RGBlink must be informed immediately in writing of any complains.

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, RGBlink 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 RGBlink, 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 RGBlink.

If the purchaser or a third party carries out modifications or repairs on goods delivered by RGBlink, 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 RGBlink 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.

### **Grounding the Product**

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

### **Use the Proper Power Cord**

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

### **Use the Proper Fuse**

To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

### **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 D2 processor 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 D2 processor 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.

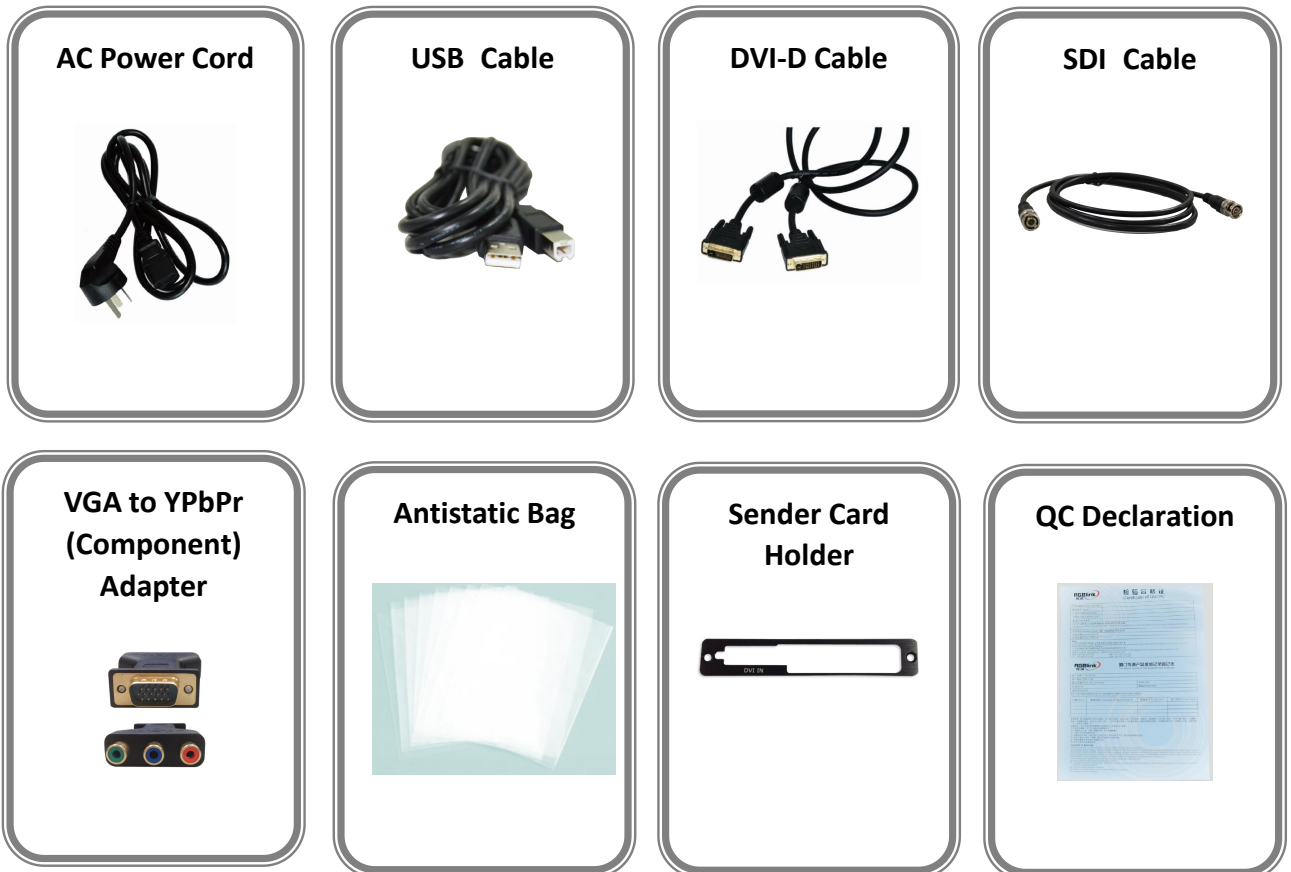
Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

## **Site Preparation**

The environment in which you install your D2 should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.

# Chapter 1 Your Product

## 1.1 In the Box



**Note:**

AC Power Cable supplied as standard according to destination market.

## 1.2 Product Overview

The new standard in presentation switching, D2 is so much more than a seamless switcher. With multiple output modes, this video processor is very flexible solution across a range of application whether for scaling, presentation switching, 2K and 4K distribution or broadcast. True two channel design enables this power enabling D2 to operate in Standard (PIP) mode, Switcher Mode, Dual 2K Mode, Split mode or MinDelay mode.

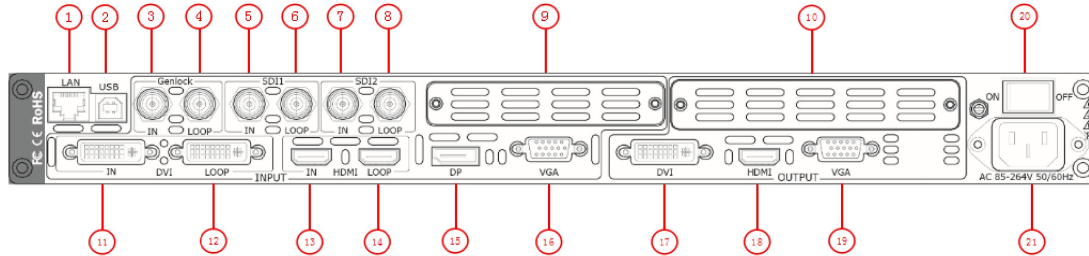
Truly an All-in-One solution, D2 accepts a wide range of input signals in a huge array of formats. Inputs can be converted, scaled, transcoded to standard DVI/HDMI outputs or output to optional ports including 3G-SDI, HDBaseT and FiberPort.

D2 packs in a host of professional features including broadcasting Genlock and EDID management as standard. For superior visual performance, on board processing is 12bit allow fine control for Noise Reduction, Brightness, Contrast, and Saturation from the RGBlink rendering engine. A range of additional input options are available including additional 3G-SDI ports (there are already two 3G-SDI with loop as standard), USB direct input.

D2 supports output of modern 2K high resolution standards up to 2560x816@60Hz. In addition to a wide range of standard output resolutions, D2 offers entirely user customisable output resolutions for the ultimate in control.



## 1.2.1 Back Panel



### Input Connectors

|      |                                                                                                                                                                          |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3    | <b><u>BNC – Genlock</u></b><br>Standard Genlock signals can input.                                                                                                       |
| 5. 7 | <b><u>BNC – 3G-SDI</u></b><br>Standard 3G-SDI signals can input.                                                                                                         |
| 11   | <b><u>DVI-I – DVI</u></b><br>Standard DVI signals can input. The DVI port supports up to HDMI 1.3 if the port format is set to HDMI.                                     |
| 13   | <b><u>HDMI-A – HDMI</u></b><br>Standard Genlock signals can input.                                                                                                       |
| 15   | <b><u>DP</u></b><br>Standard DisplayPort signals can input.                                                                                                              |
| 16   | <b><u>DB15 – VGA</u></b><br>Standard VGA signals can input. Additionally this VGA port supports Component (YPbPr) with the use of a VGA to Component adapter (supplied). |

### Output Connectors

|      |                                                                                                                                        |
|------|----------------------------------------------------------------------------------------------------------------------------------------|
| 4    | <b><u>BNC – Genlock Loop Out</u></b><br>Connect to the Genlock input of the next D2 or the device with Genlock input.                  |
| 6. 8 | <b><u>BNC – 3G-SDI Loop Out</u></b><br>Connect to the SDI input of the next D2 or the device with SDI input.                           |
| 12   | <b><u>DVI-I – DVI Loop Out</u></b><br>Connect to the DVI input of the next D2 or the device with DVI input.                            |
| 14   | <b><u>HDMI-A – HDMI Loop Out</u></b><br>Connect to the HDMI input of the next D2 or the device with HDMI input.                        |
| 17   | <b><u>DVI-I – DVI</u></b><br>Connect to the monitor or LED display which has DVI interface. (This connector does not support hotplug). |
| 18   | <b><u>HDMI-A – HDMI</u></b><br>Connect to the display device, video processor or matrix.                                               |
| 19   | <b><u>DB15 – VGA</u></b>                                                                                                               |

|  |                                                                                                           |
|--|-----------------------------------------------------------------------------------------------------------|
|  | Connect to the monitor or LED display which has VGA interface. (This connector does not support hotplug). |
|--|-----------------------------------------------------------------------------------------------------------|

### Control Connectors

|      |                                                                                                                                 |
|------|---------------------------------------------------------------------------------------------------------------------------------|
| 1    | <b><u>RJ45 – Ethernet</u></b><br>Connect to Ethernet work for remote control by Windows software.                               |
| 6. 8 | <b><u>USB-B – USB</u></b><br>Connect to Ethernet work for remote control by Windows software and for product firmware upgrades. |

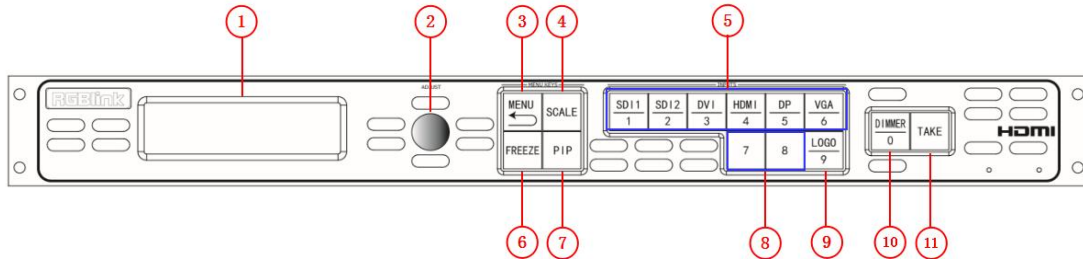
### Power Connection

|    |                                                                         |
|----|-------------------------------------------------------------------------|
| 20 | <b><u>Power Switch</u></b><br>Illuminated power switch.                 |
| 21 | <b><u>IEC – Power Input</u></b><br>Main power input AC 85-264V Max 45W. |

### Option Slots

|    |                                                                                                                                                                                                                                                                                                                                                                             |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9  | <b><u>Input Option Slots</u></b><br>Range of inputs are available for user fitting.<br>Refer to Product <a href="#">Input Options</a>                                                                                                                                                                                                                                       |
| 10 | <b><u>Sender Card/Output Option Slots</u></b><br>Either a Sender Card or Output option can be installed in this slot.<br>Support sender Card types including Linsn, Nova and Colorlight (sold separately).<br>Refer to Product <a href="#">Sender Cards</a><br>A range of output options are available for user fitting.<br>Refer to Product <a href="#">Output Options</a> |

## 1.2.2 Front Panel



### Display

|   |                                                                                                                                                                                       |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <p><b><u>OLED Display</u></b><br/>Displays current status of the product, and for feature selections provides interactive choices in conjunction with buttons on the front panel.</p> |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Multi-Function Buttons

|   |                                                                                                                                                                                           |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p><b><u>Rotary Button</u></b><br/>This button used for menu selections and confirmation.<br/>The button is both rotary (turn to left and right), and push-button (confirm selection)</p> |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Illuminated Buttons

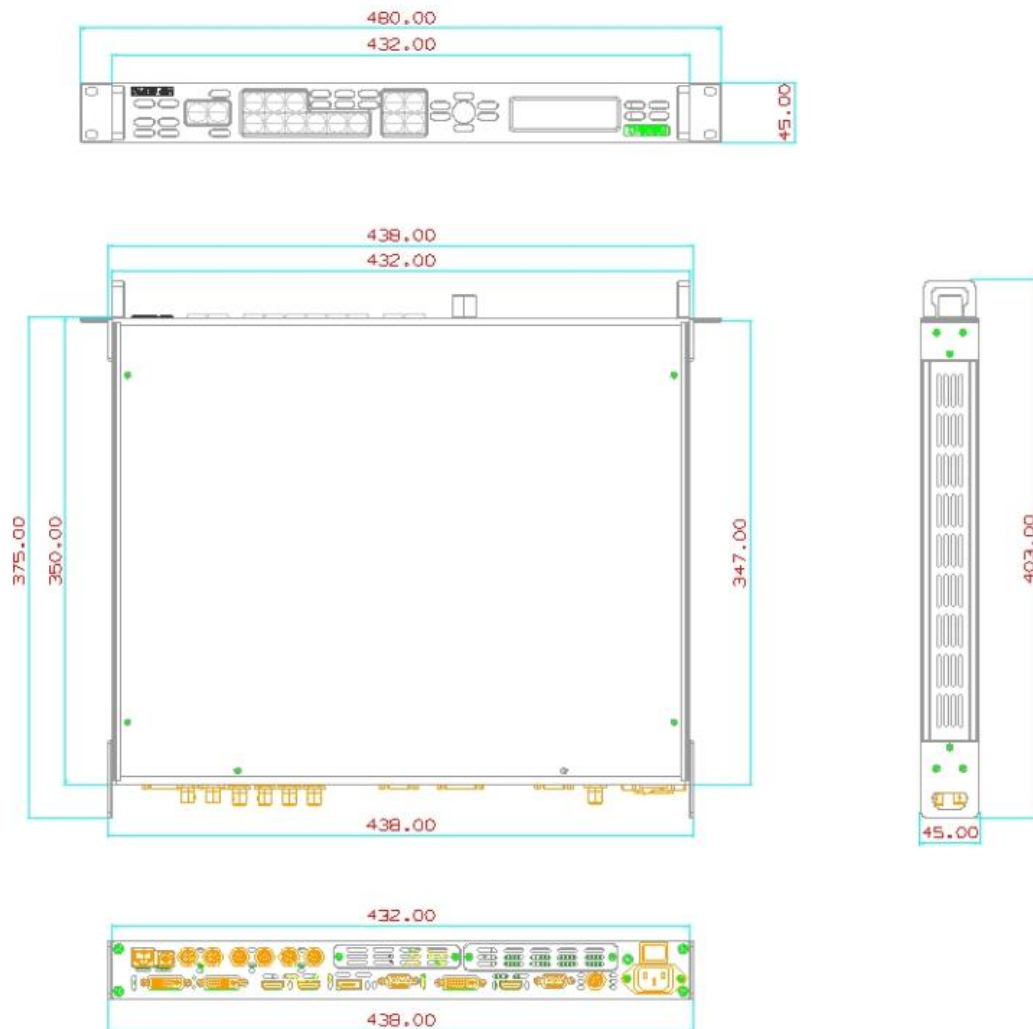
|   |                                                                                                                                                                                                                                                                                                                                                                                       |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 | <p><b><u>MENU Button</u></b><br/>This button used for menu selections – refer to <a href="#">Understanding the MENU Structure</a>.<br/>Push the button again will return to the last level menu or exit the menu.<br/>Push the button for 3 seconds will lock the front panel.</p>                                                                                                    |
| 4 | <p><b><u>SCALE Button</u></b><br/>This button used for size and position adjusting.</p>                                                                                                                                                                                                                                                                                               |
| 5 | <p><b><u>Dedicated Signal Buttons</u></b><br/>For each of inputs on the back panel a dedicated backlit buttons are provided. When lit, the signal is selected for use, when red light is flashing, signal is in preview or the signal is not available.<br/>Additionally, each button is numbered and can be used as direct number entry when values such as resolution and size.</p> |
| 6 | <p><b><u>FREEZE Button</u></b><br/>This button used for freezing the image.</p>                                                                                                                                                                                                                                                                                                       |
| 7 | <p><b><u>PIP Button</u></b><br/>This button used for single and double image switching.<br/>Additionally this button reused for DSK shortkey if enable the DSK function.</p>                                                                                                                                                                                                          |
| 8 | <p><b><u>Optional Signal Buttons</u></b><br/>If optional input module is fitted, then these two buttons operate as per Dedicated Signal Buttons above.</p>                                                                                                                                                                                                                            |

---

|    |                                                                                                                                                                                                   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Additionally these buttons are used for direct numeric entry for numbers 7/8.                                                                                                                     |
| 9  | <b><u>LOGO Button</u></b><br>When lit is use as configured from the menu for a captured logo/image or a test pattern.<br>Additionally this button is used for direct numeric entry for numbers 9. |
| 10 | <b><u>DIMMER Button</u></b><br>This button used for dimmer and effects adjusting, also for CHA and CHB selection.<br>Additionally this button is used for direct numeric entry for number 0.      |
| 11 | <b><u>TAKE Button</u></b><br>This button used for seamless effect switching.<br>Additionally this button reused for load function except in switcher mode.                                        |

## 1.2.3 Dimension

Following is the dimension of D2 for your reference:



# Chapter 2 Installing Your Product

---

## 2.1 Plugging in Signals

Connect signals to the product (ensure all devices are powered off first). Tighten connector screws/locks where provided.



For connector protection and for additional cable support this product is fitted with protection frames on either side of the device. For cable support use cable ties to attached to the protection frames to avoid stress on signal connectors.

## 2.2 Plugging in Main Power

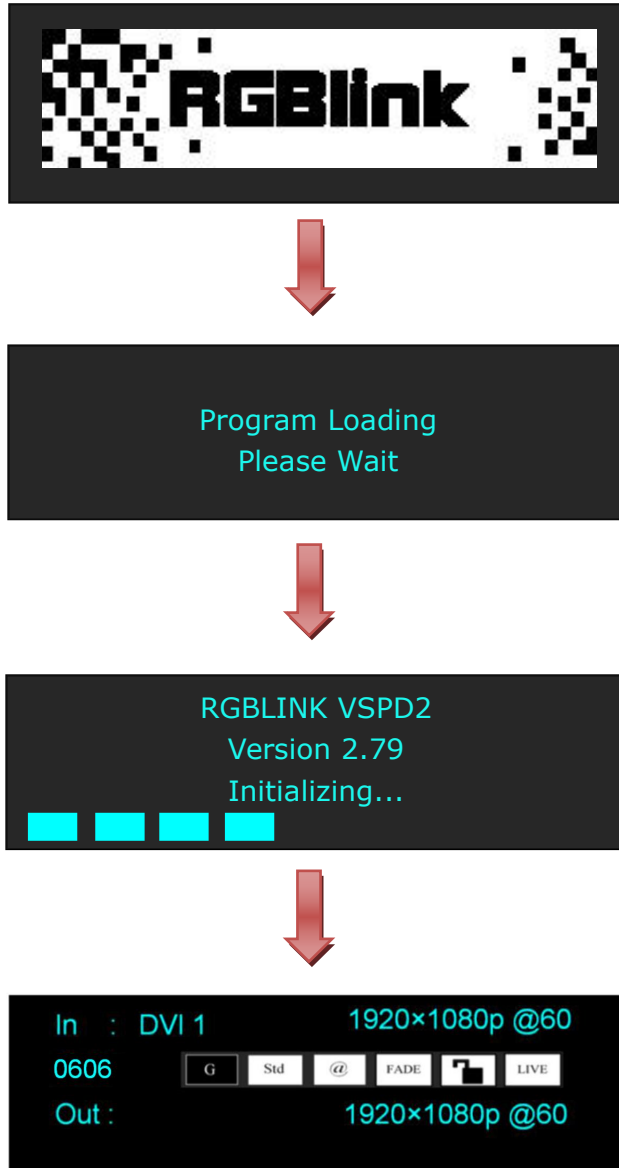
Connect IEC cable to device and plug into wall socket. Turn on power at wall socket.

## 2.3 Turning on Your Product

Turn the power switch on the rear of the product to the ON position.

OLED display will show as below, completing initialization before loading last settings and input/output configuration.

On delivery, DVI1 will be the default input signal at 1920x1080@60Hz, and the output format is defaulted to 1920x1080p@60Hz.



## Chapter 3 Using Your Product

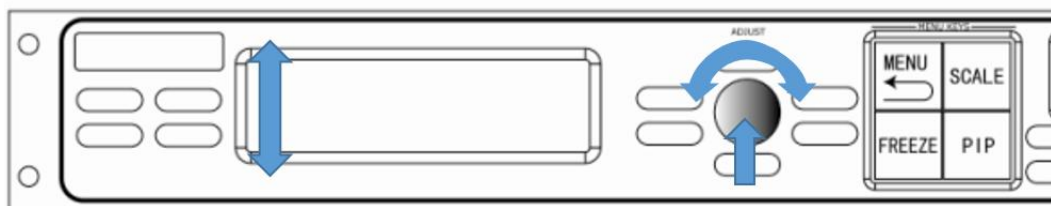
---

### 3.1 Using the MENU Button

Push the [MENU] button to enter the menu display.

Turn the rotary knob to navigate to the menu item required. The → symbol shows the current item. Push the knob to select and enter into the menu item.

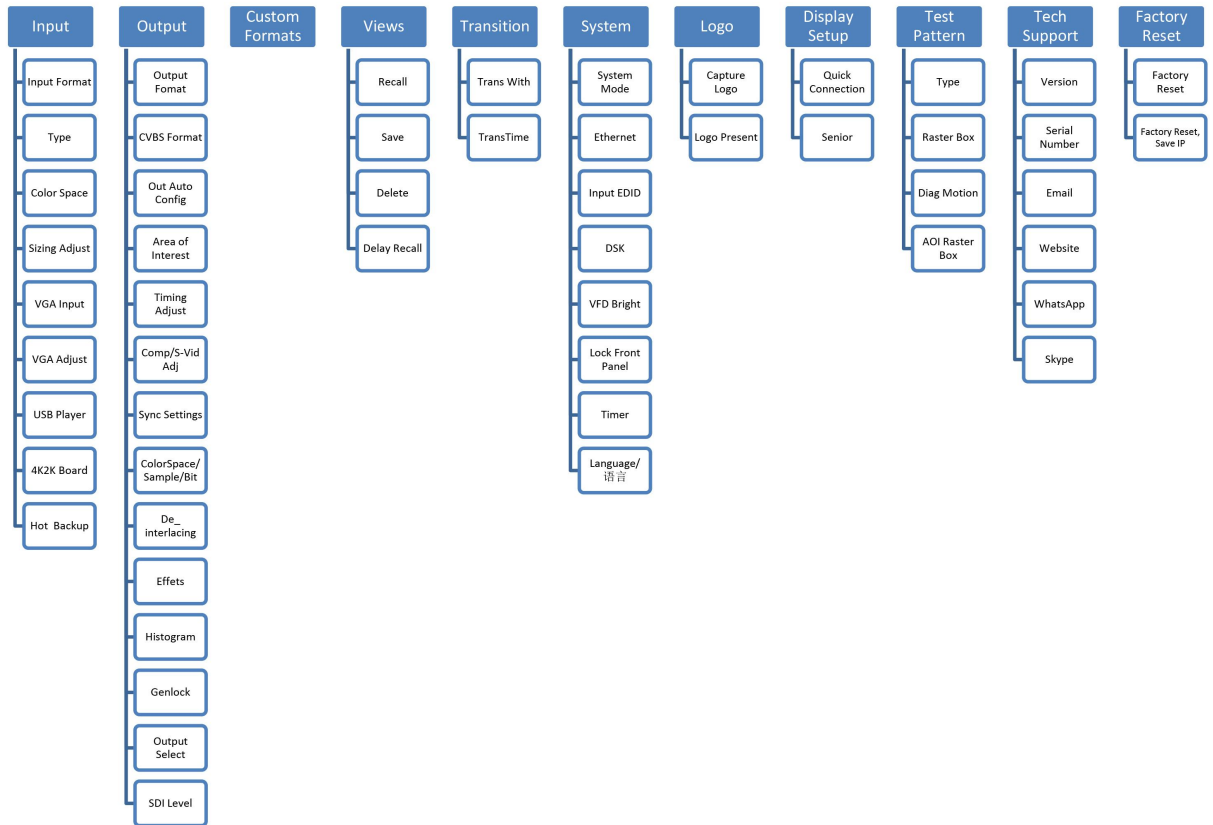
As shown in the figure below:





## 3.2 Understanding the MENU Structure

The MENU structure is shown in the figure below:

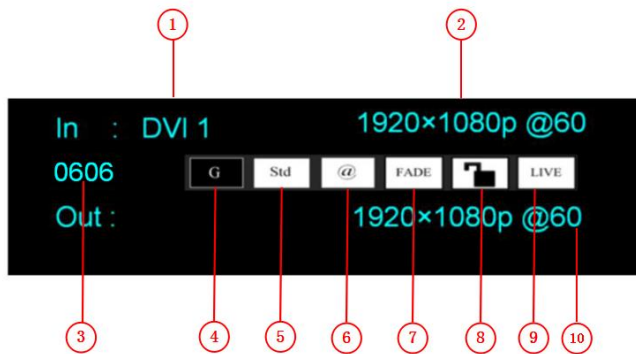


## 3.3 Using the Menu

Use the menu system for convenient and intuitive operation. D2 OLED display shows the menu items. The OLED display will show the default state when the menu is not in use, or the operation has timed out. Using the MENU button and rotary knob in the front panel, the OLED display will show the corresponding menus according to user selections.

### 3.3.1 Understanding the Display

Turn the power switch to the ON position, the OLED display will show the start-up interface and show the default menu after completing initialization as below:



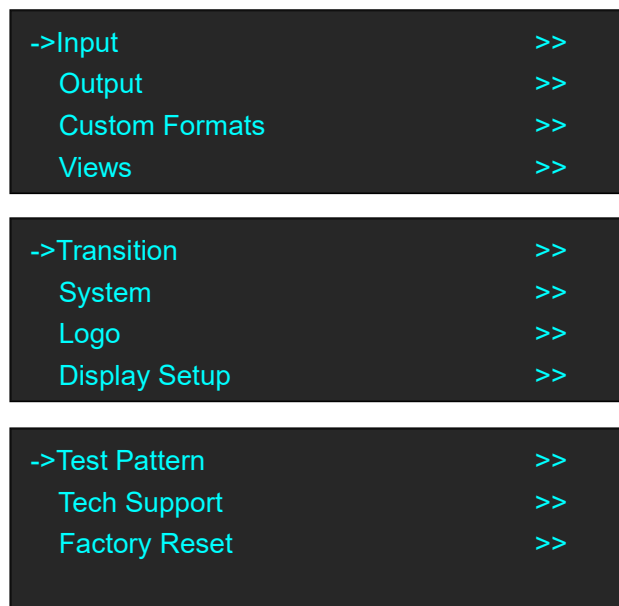
Introduce for the above information:

|   |                                                                                                                                                                                                                                                                                                                                                                                                  |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <p><b><u>Input Signal</u></b></p> <p>Shows the current <b>Input</b> signal that is selected. The related dedicated signal button will be lit red.</p>                                                                                                                                                                                                                                            |
| 2 | <p><b><u>Input Resolution</u></b></p> <p>Show the current input resolution from the selected <b>Input</b> source. To configure input resolutions, use the EDID Management features. A wide range of input resolutions are supported depending the input – refer to <a href="#">Specification</a>.</p> <p>If a # symbol is show after the resolution, then a custom resolution is being used.</p> |
| 3 | <p><b><u>Serial Number</u></b></p> <p>Shows the serial of the product.</p> <p>When not displayed here, the serial number can be found via the TECH SUPPORT menu.</p>                                                                                                                                                                                                                             |
| 4 | <p><b><u>Genlock</u></b></p> <p>Displays to whether a Genlock signal is currently being provided (input). Config from the OUTPUT menu.</p>                                                                                                                                                                                                                                                       |
| 5 | <p><b><u>System Mode</u></b></p> <p>Indicates the current SYSTEM MODE. SYSTEM MODE is set from the SYSTEM menu.</p>                                                                                                                                                                                                                                                                              |
| 6 | <p><b><u>Ethernet</u></b></p>                                                                                                                                                                                                                                                                                                                                                                    |

|    |                                                                                                                                                                                                                                                                                                          |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Displays whether Ethernet connection is active or inactive. Ethernet settings are available in the SYSTEM menu.                                                                                                                                                                                          |
| 7  | <b><u>Fade</u></b><br>Indicates whether transitions are CUT or FADE. Configure from the TRANSITION menu.                                                                                                                                                                                                 |
| 8  | <b><u>Lock</u></b><br>Indicates if the front panel is locked. Hold MENU button for 3 seconds to lock or unlock.                                                                                                                                                                                          |
| 9  | <b><u>Live</u></b><br>Indicates whether output video Live or whether FREEZE is active.                                                                                                                                                                                                                   |
| 10 | <b><u>Output Resolution</u></b><br>Show the current output resolution. To configure output resolutions, use the OUTPUT menu. A wide range of resolutions are supported – refer to <a href="#">Specification</a> .<br>If a # symbol is show after the resolution, then a custom resolution is being used. |

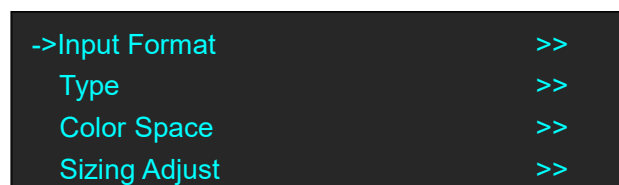
### 3.3.2 Understanding the Main Menu

Push the MENU button in the default state and turn the rotary knob, the OLED display will show the main menus as below:



There are 11 menu items in the main menu, and display in 3 pages. Turn the rotary knob, and select any menu above, push the rotary knob to confirm, the OLED display will show the submenu. If push the MENU button, the OLED display will return to the last level menu.

### 3.3.3 Input Menu



```

->VGA Input      >>
  VGA Adjust     >>
  USB Player      >>
  4K2K Board      >>

```

```

->Hot Backup     >>

```

|                                                                                         |                                                                                                                                                        |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Format                                                                            | Show the current input format.                                                                                                                         |
| Type                                                                                    | The type is DVI 1.                                                                                                                                     |
| Color Space                                                                             | RGB, YPbPr 422, YPbPr 444 or Auto Detect can be selected.                                                                                              |
| Sizing Adjust                                                                           | <b><u>H Size</u></b><br>Set the width of the image.                                                                                                    |
|                                                                                         | <b><u>V Size</u></b><br>Set the height of the image.                                                                                                   |
|                                                                                         | <b><u>H Pos</u></b><br>Set the horizontal phase.                                                                                                       |
|                                                                                         | <b><u>V Pos</u></b><br>Set the vertical phase.                                                                                                         |
|                                                                                         | <b><u>Reset Size</u></b><br>Reset size if image quality distorts by improper operation.                                                                |
|                                                                                         | <b><u>Mask Top</u></b><br>Mask the top of the image.                                                                                                   |
|                                                                                         | <b><u>Mask Bottom</u></b><br>Mask the bottom of the image.                                                                                             |
|                                                                                         | <b><u>Mask Left</u></b><br>Mask the left of the image.                                                                                                 |
|                                                                                         | <b><u>Mask Right</u></b><br>Mask the right of the image.                                                                                               |
|                                                                                         | <b><u>Mask Presets</u></b><br>16:9, 5:4, 4:3, 3:2 or 1:1 can be selected.                                                                              |
| <b><u>Reset Mask</u></b><br>Reset mask if image quality distorts by improper operation. |                                                                                                                                                        |
| VGA Input                                                                               | VGA input or YPbPr input can be selected.                                                                                                              |
| VGA Adjust                                                                              | Brightness red, brightness green, brightness blue, saturation, temperature red, temperature green and temperature blue setting, or select auto adjust. |
| USB Player                                                                              | <b><u>USB Select</u></b><br>USB1 or USB2 can be selected.                                                                                              |
|                                                                                         | <b><u>File Number</u></b>                                                                                                                              |

|            |                                                                                                                                                                                                                                                                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | Select the file number that will play.                                                                                                                                                                                                                                                                                                                |
|            | <b><u>Play File</u></b><br>Select the play file that will play.                                                                                                                                                                                                                                                                                       |
|            | <b><u>Play Mode</u></b><br>Picture or video can be selected.                                                                                                                                                                                                                                                                                          |
|            | <b><u>Duration of Picture</u></b><br>Set the time of duration of picture.                                                                                                                                                                                                                                                                             |
|            | <b><u>Play Order</u></b><br>Repeat All, Shuffle, Order, Single Cycle or Single Track can be selected.                                                                                                                                                                                                                                                 |
|            | <b><u>Play State</u></b><br>Play or pause can be selected.                                                                                                                                                                                                                                                                                            |
|            | <b><u>USB Upgrade</u></b><br>Enable or disable the USB upgrade function.                                                                                                                                                                                                                                                                              |
| 4K2K Board | HDMI Point To Point or DP Point To Point can be selected. The resolution that output to D2 from 4K2K board will be the same with the HDMI input resolution of 4K2K board if choose HDMI Point To Point. And the resolution that output to D2 from 4K2K board will be the same with the DP input resolution of 4K2K board if choose DP Point To Point. |
| Hot Backup | Select “ON” or “OFF”. If select “ON”, it will switch to the backup signal when interrupt signal. System default switch to the next signal.                                                                                                                                                                                                            |

### 3.3.4 Output Menu

```

->Output Format          >>
  CVBS Format            >>
  Out Auto Config (N/A) >>
  Area of Interest      >>

```

```

->Timing Adjust (N/A)   >>
  Comp/S-Vid Adj (N/A) >>
  Sync Settings (N/A)  >>
  Color Space/Sample/Bit >>

```

```

->De_interlacing       >>
  Effects               >>
  Histogram             >>
  Genlock               >>

```

```

->Output Select         >>
  SDI Level             >>

```

|                            |                                                                                                                   |
|----------------------------|-------------------------------------------------------------------------------------------------------------------|
| Output Format              | There are 72 kinds of common resolutions.                                                                         |
| CVBS Format                | <b><u>CVBS Format</u></b><br>PAL or NTSC can be selected.                                                         |
|                            | <b><u>CVBS Ratio</u></b><br>4:3 or 16:9 can be selected.                                                          |
| Out Auto<br>Config         | N/A                                                                                                               |
| Area of Interest           | Set H size, V size, H/V size, H pos and V pos.                                                                    |
|                            | <b><u>Scaling Mode</u></b><br>FULL, Same With Input, 3:2, 4:3, 5:4 and 16:9 can be selected.                      |
|                            | <b><u>Reset</u></b><br>If image quality distorts by improper operation, it can be recover by reset.               |
|                            | <b><u>Use AOI</u></b><br>Select use AOI or not.                                                                   |
|                            | <b><u>Full Size</u></b><br>Select full size or not.                                                               |
| Timing Adjust              | N/A                                                                                                               |
| Comp/S-Vid<br>Adj          | N/A                                                                                                               |
| Sync Setitngs              | N/A                                                                                                               |
| Color Space/<br>Sample/Bit | DVI or HDMI can be selected.                                                                                      |
|                            | <b><u>Bit Depth</u></b><br>Defaulted 8 bit for DVI and 10 bit for HDMI, 8 bit or 12 bit can be selected for HDMI. |
|                            | <b><u>Color Space</u></b><br>Image or video can be selected.                                                      |
|                            | <b><u>Output EQ</u></b><br>Output EQ setting, the adjustment range is 0~7.                                        |
|                            | <b><u>Output Driver</u></b><br>Output driver setting, the adjustment range is 0~5.                                |
| De_interlacing             | Select "ON" or "OFF"                                                                                              |
|                            | <b><u>Delay Time</u></b><br>Short or long can be selected.                                                        |
|                            | <b><u>Enable 2:2PD</u></b><br>Select "ON" or "OFF" to enable or disable 2:2PD function.                           |
|                            | <b><u>2:2PD Time</u></b><br>The adjustment range is 0~15.                                                         |
|                            | <b><u>Enable 2:3PD</u></b><br>Select "ON" or "OFF" to enable or disable 2:3PD function.                           |
|                            | <b><u>2:3PD Time</u></b><br>The adjustment range is 0~15.                                                         |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <p><b><u>Motion Detection</u></b><br/>Level 1~Level 5 can be selected.</p> <p><b><u>Diagonal Correction</u></b><br/>The adjustment range is 0~3.</p> <p><b><u>24sF Mode</u></b><br/>Select “ON” or “OFF” to enable or disable 24sF Mode function.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Effect        | <p><b><u>Brightness</u></b><br/>Brightness RED, Brightness GREEN and Brightness BLUE setting.</p> <p><b><u>Contrast</u></b><br/>Contrast RED, Contrast GREEN and Contrast BLUE setting.</p> <p><b><u>Chroma</u></b><br/>Set Chroma, Y, U, and V.</p> <p><b><u>Hue</u></b><br/>The adjustment range is -180~180.</p> <p><b><u>Color Temperature</u></b><br/>Can set 3200K, 6500K or 9300K.</p> <p><b><u>Color Correction</u></b><br/>Blue, green and skin color can be corrected.</p> <p><b><u>Gamma</u></b><br/>1, 1.1, 1.2, 1.3, 1.4,1.5, 1.6 can be selected.</p> <p><b><u>H Sharpness</u></b><br/>The adjustment range is -10~10.</p> <p><b><u>V Sharpness</u></b><br/>The adjustment range is -10~10.</p> <p><b><u>Noise Reduction</u></b><br/>Including Horizontal NR, Vertical NR, Temporal NR, Block NR, Mosquito NR and Combing NR.</p> <p><b><u>Invert</u></b><br/>Select “ON” or “OFF” to enable or disable Invert function.</p> <p><b><u>Flip V</u></b><br/>Select “ON” or “OFF” to enable or disable Flip V function.</p> <p><b><u>Flip H</u></b><br/>Select “ON” or “OFF” to enable or disable Flip H function.</p> <p><b><u>Flip 90 Degree</u></b><br/>Select “ON” or “OFF” to enable or disable Flip 90 Degree function.</p> |
| Histogram     | Select “ON” or “OFF”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Genlock       | <p><b><u>Source</u></b><br/>Freerun, external or input can be selected.</p> <p><b><u>External State</u></b><br/>Show the format and F, V, H and clock lock state.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Output Select | Select CHA or CHB for DVI, HDMI, VGA or CVBS output.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SDI Level     | When install two SDI outputs module, user can set the SDI1 and SDI2 level as Level A or Level B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

### 3.3.5 Custom Formats Menu

```

Custom Formats
->1920×1080×60.0
Use red number keys and knob
for enter
  
```

|                |                                                                                                                                                                                           |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Custom Formats | The special display project or LED display application would like to require special resolution settings to meet the requirement--refer to <a href="#">Custom the Output Resolution</a> . |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 3.3.6 Views Menu

```

->Recall >>
Save >>
Delete >>
Delay Recall >>
  
```

|              |                                             |
|--------------|---------------------------------------------|
| Recall       | Provide 22 saving modes for recall.         |
| Save         | Provide 22 positions for saving parameters. |
| Delete       | Delete the file.                            |
| Delay Recall | Delay recall time setting.                  |

### 3.3.7 Transition Menu

```

->Trans With Fade
Trans Time 0.1S
  
```

|            |                                  |
|------------|----------------------------------|
| Trans With | Fade or cut can be selected.     |
| Trans Time | The adjustment range is 0.1~10S. |

### 3.3.8 System Menu

```

->System Mode >>
Ethernet >>
Input EDID >>
DSK >>
  
```



```

->VFD Bright (N/A)           >>
  Lock Front Panel           >>
  Timer (N/A)                 >>
  Language/语言               >>

```

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System Mode      | Standard, Dual 2K, Switcher, Split or MinDelay can be selected -- refer to <a href="#">System Operation Mode</a> .                                                                                                                                                                                                                                                                                                                                                                                                         |
| Ethernet         | DHCP, IP, subnet mask, gateway setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Input EDID       | Including Input DVI, Input HDMI, Input DP, Input 4K2K HDMI and Input 4K2K DP.<br>User can read the EDID information in <b><u>EDID Info</u></b><br>User can custom the EDID formats in <b><u>Custom Formats</u></b><br>In <b><u>Auto Config</u></b> , user can copy the EDID of DVI output device to the front-end input source, set the default EDID output format of input format as DVI/HDMI out format of the device, and copy the system default RGBDVI EDID to the EDID of input source. It can not support DP input. |
| DSK              | Select the input source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                  | <b><u>Preset</u></b><br>Including BackGround, Green BackGround, Blue BackGround, Red BackGround and White BackGround.                                                                                                                                                                                                                                                                                                                                                                                                      |
|                  | <b><u>Alpha</u></b><br>The adjustment range is 0~100.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                  | Red Min, Red Max, Green Min, Green Max, Blue Min and Blue Max setting, the adjustment range is 0~255.                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                  | <b><u>DSK</u></b><br>Select “ON” or “OFF”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| VFD Bright       | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Lock Front Panel | Select “Lock” or “Unlock” the front panel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Timer            | Timed task setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Language/语言      | Chinese or English can be selected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

### 3.3.9 Logo Menu

```

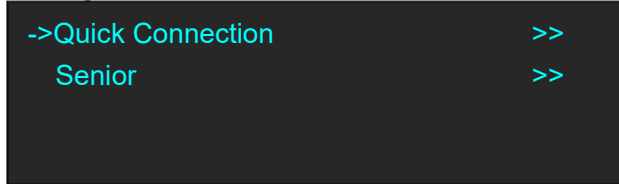
->Capture Logo           Enable
  Logo Present           No Logo

```

|              |                                                                                                  |
|--------------|--------------------------------------------------------------------------------------------------|
| Capture Logo | Select “Enable” or “Disable” the capture Logo function – refer to <a href="#">Capture LOGO</a> . |
|--------------|--------------------------------------------------------------------------------------------------|

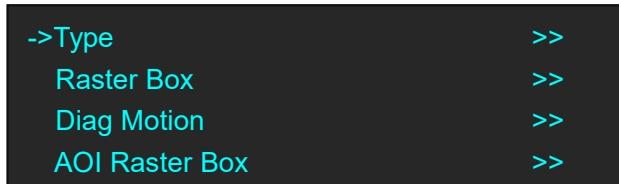
|              |                           |
|--------------|---------------------------|
| Logo Present | Display the present logo. |
|--------------|---------------------------|

### 3.3.10 Display Setup Menu



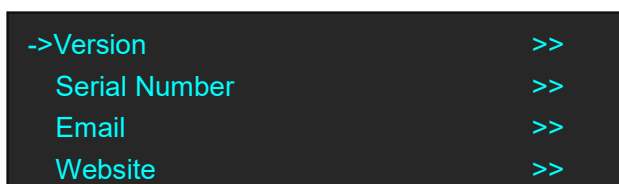
|                  |                                                                                                                         |
|------------------|-------------------------------------------------------------------------------------------------------------------------|
| Quick Connection | Select the card type, set the brightness and output format -- refer to <a href="#">Set the LED Display Connection</a> . |
| Senior           | Set the receiving card separately.                                                                                      |

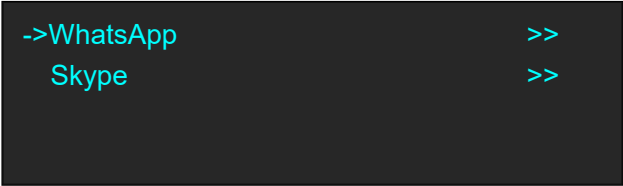
### 3.3.11 Test Pattern Menu



|                |                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type           | Select type of Test Pattern to be displayed. Options are:<br>LOGO        Video frame captured as in the LOGO (see <a href="#">Capture LOGO</a> for instruction on how to capture LOGO)<br>RAMPS       H RAMP, V RAMP<br>COLOR BARS    100% COL BAR, 75% COL BAR, SMPTE COL BAR<br>GRIDS        16*16 GRID, 32*32 GRID, BURST<br>GREYS        50% GRAY, GRAY STEP1, GRAY STEP2, WHITE, BLACK |
| Raster Box     | Select "ON" or "OFF". If raster box is "ON", the border is shown around the image, which is for testing.                                                                                                                                                                                                                                                                                    |
| Diag Motion    | Enable/Disable Diagonal Motion of the selected test pattern. Select "ON" or "OFF".                                                                                                                                                                                                                                                                                                          |
| AOI Raster Box | If Raster Box (above) is "ON", size settings in this menu for Box X, Box Y, Box Width and Box Height are displayed. Select Reset to restore default settings. AOI raster box will display for all signals except LOGO (Test Pattern).                                                                                                                                                       |

### 3.3.12 Tech Support Menu





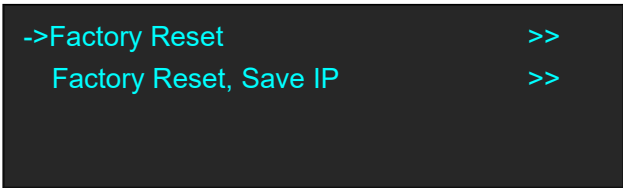
```

->WhatsApp >>
Skype >>

```

|               |                                                                                                                                                                                                                                                                 |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Version       | Shows the device firmware version for each component. Shown are Main Board HW, Control Board HW, Core Board SW, Control Board SW, Web COM, Web Server, FPGA1, FPGA2, Optional Input (where fitted), Input SDI1, Input SDI2, Multi Sync, 2U LCD and Sender Card. |
| Serial Number | Displays the serial number of the device.                                                                                                                                                                                                                       |
| Email         | Provides on display contact information for RGBlink Support by Email.                                                                                                                                                                                           |
| Website       | Provides on display contact information for RGBlink website.                                                                                                                                                                                                    |

### 3.3.13 Factory Reset Menu



```

->Factory Reset >>
Factory Reset, Save IP >>

```

|                        |                                                                                  |
|------------------------|----------------------------------------------------------------------------------|
| Factory Reset          | Select "YES" or "NO". Select "YES" to restore default settings.                  |
| Factory Reset, Save IP | Select "YES" or "NO". Select "YES" to restore default settings, but keep the IP. |

---

## 3.4 System Operation Mode

D2 has five operation modes, which are called SYSTEM MODEs, these include Standard, Dual 2K, Switcher, Split and MinDelay.

### 3.4.1 System Modes

#### Standard

In standard mode, both output channels output the same signal and resolution.

PIP is available for use.

This is the default mode following a reset.

#### Dual 2K

Each of the two output channels can have individually have resolution and scale set.

There is no PIP in this mode.

#### Switcher

Using this mode enables Preview and Program operations, with the DVI (as standard) being the Program output and HDMI being the Preview output.

Resolution of each output is the same, however, each program/preview can have scale independently set.

There is no PIP in this mode.

#### Split

Allows splitting a input signal across both output channels, and also provides setting where the source is to be split across more than one device.

There is no PIP in this mode.

#### MinDelay

Is mainly for broadcast applications, for signal conversion with less than 1 frame delay.

There is no PIP in this mode.

### 3.4.2 Set the System Operation Mode

Go to the SYSTEM menu select the required SYSTEM MODE.

For all SYSTEM MODEs other the SPLIT, the D2 will show "SYSTEM MODE SETTING...", which will take up to 30secs before the device is ready.

#### Single Image Switching

D2 can realize seamless effects switching between two channels.

Push the signal button, and the signal will be switched to the output.

For example, the [SDI1] button light is on, it means the signal of output is SDI1, if user needs to switch to VGA signal, push the [VGA] button, and the signal will be seamless cut or fade in fade out to the output. User can adjust the switch speed in <Trans Time> option in <Transition> by pushing the [MENU] button.

## PIP Setting

### Enable the PIP function

D2 supports seamless switch in single image and double images.

Push the [PIP] button, the button light is on, and enable the PIP function.

### Select the signal in PIP

D2 can output two same or different signals to the output, the settings are as follows:

1. Push the [PIP] button, and enable the PIP function.
2. Push the [SCALE] or [DIMMER] button, select <Layer Select>, and push the rotary knob to confirm. (User can also select <Layer Select> in <Input> or <Output> option by pushing the [MENU] button.
3. Turn the rotary knob, and select main or sub image.
4. Select the signal, and the selected image will be switched to this signal.

#### Note

Note: PIP Setting is applied to Standard Mode.

## Scale Setting

1. Push the [SCALE] button, and enter to the scale function menus.
2. Adjust the H size, V size, H/V size, H pos, V pos and scaling mode by turning the rotary knob or number buttons.
3. If image quality distorts by improper operation, it can be recover by reset.

#### Note

In PIP mode, user need to select the image that to set in <Layer Select> option before setting.

## Image Size Setting

1. Push the [MENU] button, and enter to the menu items.
2. Turn the knob, and select <Input>, push the knob to confirm.
3. Turn the knob, select <Sizing Adjust>, push the knob to confirm.
4. Adjust the H size, V size, H pos V pos, and mask top, bottom, left and right of the image by turning the rotary knob or number buttons.
5. If image quality distorts by improper operation, it can be recover by reset.

**Note**

In PIP mode, user need to select the image that to set in <Layer Select> option before setting.

**Dimmer and Effects Setting**

1. Push the [DIMMER] button, and enter to the menu items, which include dimmer and effects.
2. Dimmer setting: The adjustment range is 0~100.
3. Effects setting: The setting for effects include brightness, contrast, chroma, hue, color temperature, color correction, gamma, brightness, H sharpness, V sharpness, noise reduction, Invert, Flip V, Flip H and Flip 90 Degree.

**Note**

User can also select <Effects> in <Output> option by pushing the [MENU] button for setting.

**Note**

In Dual 2K mode, User need to select the channel in <Channel Select> before setting.

For example, choose the signal of CHB:

1. Push the [MENU] button to enter to menu items.
2. Select <Output>, push the rotary knob to confirm.
3. Turn the rotary knob, and select <Channel select>.
4. Turn the rotary knob and select CHB.
5. Select the signal, and CHB will switch to the selected signal.

**Note**

In Switcher mode, all the settings above are for preview.

**Split Setting**

In split mode, user can set split parameters of single or multiple devices quickly. The split operations are as follows:

**Project:** There is one LED display, the size is 3864x1152, divide into right and left halves, the left width is 1824 and the right width is 2040, we will cascade the two LED displays with one D2, and display a complete picture in the whole screen.

**(1) Connect the interface**

Connect the DVI signal to the DVI input interface, connect the DVI output to the left LED sending card, and connect the HDMI output to the right LED sending card.

**(2) Select the system mode**

Push the [MENU] button to enter to the menu items, turn the rotary knob to select <System>:

```

Transition >>
->System >>
Logo >>
Display Setup >>

```

Push the knob to confirm, turn the rotary knob to select <System Mode>:

```

->System Mode >>
Ethernet >>
Input EDID >>
VFD Bright >>

```

Push the knob to confirm, turn the rotary knob to select <Split>:

```

System Mode
* Split

```

### (3) Select the split mode

Turn the rotary knob in split menus, and select the split mode as <One Machine> or <Multi Machine>.

```

->One Or Multi One Machine

```

Select <One Machine>, push the rotary knob to confirm, turn the rotary knob, select the split mode, for example, select <H One-To-Two>:

```

One Machine
* H One-To-Two

```

### (4) Set the output format

Push the [MENU] button to enter to the menu items, turn the rotary knob and choose <Output>.

```

Input >>
->Output >>
Custom Formats >>
Views >>

```

Push the rotary knob to confirm. Turn the knob to select <Output Format>, and set the output formats as 2048x1152@60Hz.

|                       |     |
|-----------------------|-----|
| Channel Select        | CHA |
| ->Output Format       | >>  |
| CVBS Format           | >>  |
| Out Auto Config (N/A) | >>  |

The resolutions of the two outputs will change at the same time.

#### (5) Set the split parameters

After select the split mode, the OLED screen will show the split parameters, set the H total as 3864, set the V total as 1152, set the first width as 1824, then turn the rotary knob, and **select <Set Parameter>**, push the rotary knob to confirm.

|               |      |
|---------------|------|
| ->H Total     | 3864 |
| V Total       | 1152 |
| First Width   | 1824 |
| Set Parameter | >>   |

#### (6) Save

Push the [MENU] button to enter to the menu items, turn the rotary knob and select <Views>.

|                |    |
|----------------|----|
| Input          | >> |
| Output         | >> |
| Custom Formats | >> |
| ->Views        | >> |

Push the rotary knob to confirm. Turn the rotary knob again and select <Save>.

|              |    |
|--------------|----|
| Recall       | >> |
| ->Save       | >> |
| Delete       | >> |
| Delay Recall | >> |

Push the rotary knob to confirm. Turn the rotary knob to select the save mode, for example, select File 4, push the rotary knob to confirm.

|          |
|----------|
| Save     |
| ->File 4 |



## 3.5 Set the Output Resolution

### 3.5.1 Select the Output Resolution

1. Push the [MENU] button, and enter to the menu items, turn the rotary knob and select <Output>:

```

Input >>
->Output >>
Custom Formats >>
Views >>

```

2. Push the rotary to confirm, and enter to the menus as below:

```

->Output Format >>
CVBS Format >>
Out Auto Config (N/A) >>
Area of Interest >>

```

3. Push the rotary to confirm. Turn the rotary knob, select the output resolution according to actual need.

```

Output Format
->1920×1080p @60

```

### 3.5.2 Custom the Output Resolution

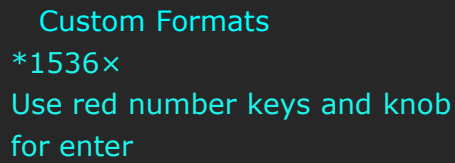
Push the [MENU] button to enter to the menu items, turn the knob and select <Custom Formats>, push the rotary knob and confirm.

```

Custom Formats
->1920×1080×60.0
Use red number keys and knob
for enter

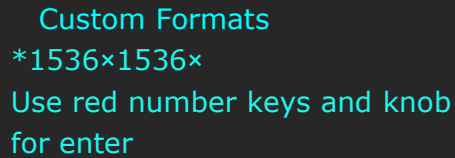
```

1. Enter digits of desired resolution by pushing the red number buttons. For example, input 1536 as following:



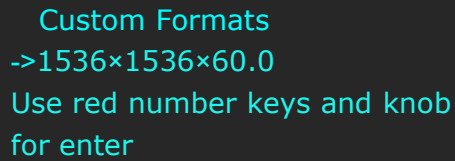
Custom Formats  
\*1536x  
Use red number keys and knob  
for enter

2. After the digital, push the rotary knob will add x, means before x is the horizontal size. Same operation for vertical size, For example, input 1536 as following:



Custom Formats  
\*1536x1536x  
Use red number keys and knob  
for enter

3. After the digital, push the rotary knob will add x, means before the x is the vertical size, and after the x is the refresh rate. Only digital 50 or digital 60 supports for the refresh rate. For example, input 60 as following. Use the digital buttons to finish the settings.



Custom Formats  
->1536x1536x60.0  
Use red number keys and knob  
for enter

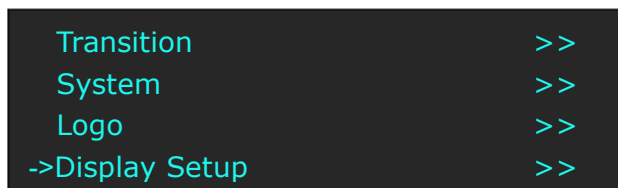
4. After input all the values, push the rotary knob to enable D2 to output this resolution. D2 will take 5~10 seconds to enable this output resolution.

## 3.6 Set the LED Display Connection

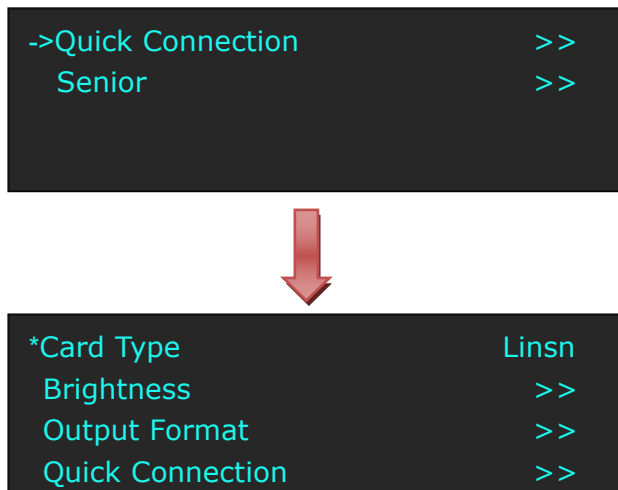
D2 can realize two connection as follows connecting the Port D or Port U of one sending card to LED screen and connecting the both Port D and Port U of one sending card to LED screen (PORT A or PORT B is for Colorlight, and PORT D or PORT U is for Linsn). The following are the detailed operation steps of the two connections.

### 1. Connect the Port D or Port U of One Sending Card to LED Screen

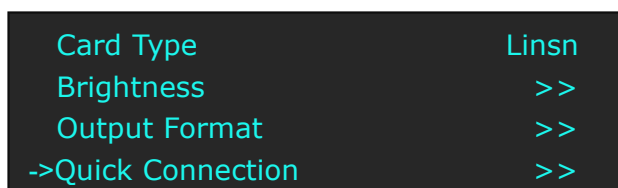
- (1) First, make sure that the device is in normal operation.
- (2) Select the input source, for example, DVI.
- (3) Connect the cable to Port U.
- (4) Turn the rotary knob, and select <Display Setup>:



- (5) Push the rotary knob to confirm, turn the rotary knob, select <Card Type> in <Quick Connection> option, push the rotary knob to confirm, turn the rotary knob, select the sending card type, for example, select Linsn (D2 supports Linsn and Colorlight sender card, for Nova sender card, it only support brightness and Gamma adjustment). Shown as follows:



- (6) After setting, turn the rotary knob, select <Quick Connection>, push the rotary knob to confirm for next setting, shown as follows:





```

->Sending Card      >>
Receiving Card     >>
  
```

- (7) Turn the rotary knob, select <Receiving Card>, push the rotary knob to confirm. Turn the rotary knob again, and select <Choose Cable>, push the rotary knob to confirm. Turn the rotary knob, select Port U and push the rotary knob to confirm.

```

Sending Card      >>
->Receiving Card >>
  
```



```

->Choose Cable      Port U
Horizontal Card     1
Vertical Card       1
Width               64
  
```

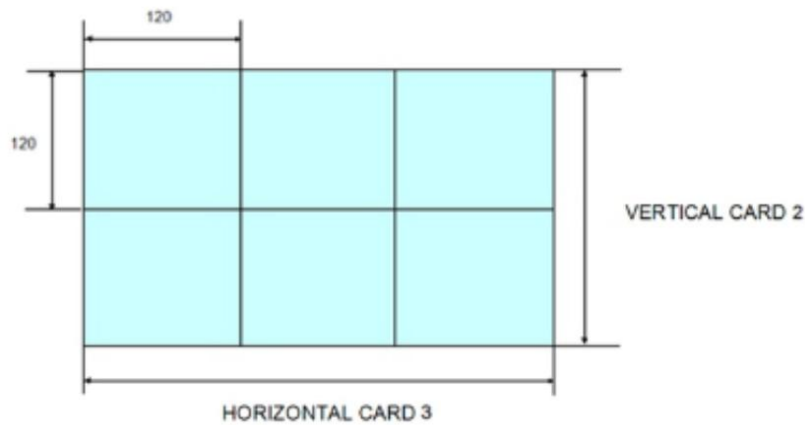
- (8) Set the horizontal card, vertical card, width and height. For example, set horizontal card as 3, vertical card as 2, width and height as 120, shown as follows:









```

Choose Cable      Port U
->Horizontal Card 3
Vertical Card     2
Width             120
  
```

```

->Height          120
Port Offset X     0
Port Offset Y     0
Connect Type     >>
  
```



After setting, turn the rotary knob and select <Connect Type> according to actual connection mode. D2 support 8 kinds of connection modes, they are , , , , , ,  and  respectively.

|                |     |
|----------------|-----|
| Height         | 120 |
| Port Offset X  | 0   |
| Port Offset Y  | 0   |
| ->Connect Type | >>  |

Save to receiver after choose the connection mode, observe the display screen and make sure if display image is correct. If wrong, change the connection types. Then connect the Port D or Port U of One Sending Card to LED Screen is finished.

(9) The setting for port D is same as the above setting.

Rendering is as follows:



## 2. Connect the Port D and Port U of One Sending Card to LED Screen

- (1) First, make sure the device is in normal operation.
- (2) Select the input source, for example, DVI.
- (3) Connect one cable to Port D, the other one to U.
- (4) Connect Port U to LED screen, the settings are same as Step 4 to Step 8 of "**Connect the Port D or Port U of One Sending Card to LED Screen**".
- (5) Connect Port D to LED screen, the settings are as follows:

- a. Turn the rotary knob, and select <Display Setup>:

|                 |    |
|-----------------|----|
| Transition      | >> |
| System          | >> |
| Logo            | >> |
| ->Display Setup | >> |

- b. Push the rotary knob to confirm, turn the rotary knob, select <Card Type> in <Quick Connection> option, push the rotary knob to confirm, turn the rotary knob, select the sending card type, for example, select Linsn (D2 supports Linsn and Colorlight sender card, for Nova sender card, it only support brightness and Gamma adjustment). Shown as follows:

|                    |    |
|--------------------|----|
| ->Quick Connection | >> |
| Senior             | >> |



|                  |       |
|------------------|-------|
| *Card Type       | Linsn |
| Brightness       | >>    |
| Output Format    | >>    |
| Quick Connection | >>    |

- c. After setting, turn the rotary knob, select <Quick Connection>, push the rotary knob to confirm for next setting, shown as follows:

|                    |       |
|--------------------|-------|
| Card Type          | Linsn |
| Brightness         | >>    |
| Output Format      | >>    |
| ->Quick Connection | >>    |



|                |    |
|----------------|----|
| ->Sending Card | >> |
| Receiving Card | >> |

- d. Turn the rotary knob, select <Receiving Card>, push the rotary knob to confirm. Turn the rotary knob again, and select <Choose Cable>, push the rotary knob to confirm. Turn the rotary knob, select Port D and push the rotary knob to confirm.

```

Sending Card          >>
->Receiving Card    >>
    
```



```

->Choose Cable      Port D
Horizontal Card     3
Vertical Card       2
Width               120
    
```

e. Turn the rotary knob, and select <Port Offset Y>, push the rotary knob to confirm. Turn the rotary knob, Set Port Offset Y as 240 (Note: Port Offset Y = Vertical × Height, before we set vertical card as 2 and height as 120). Shown as follows:

```

Height              120
Port Offset X       0
->Port Offset Y     240
Connect Type        >>
    
```

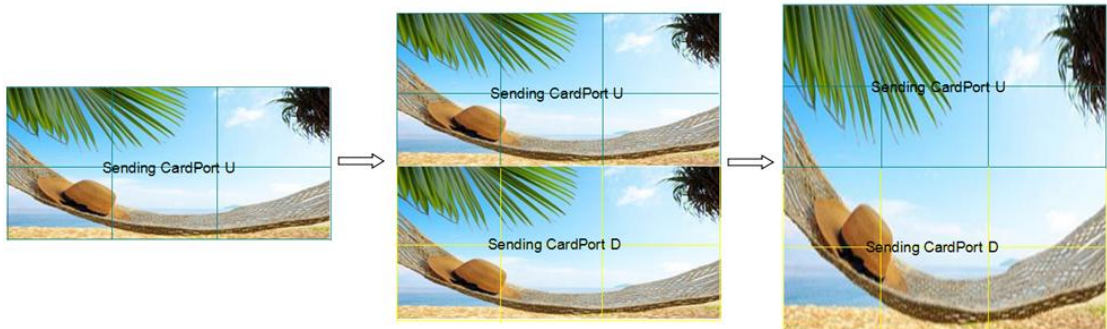
f. Turn the rotary knob, and select <Connect Type>, shown as follows:

```

Height              120
Port Offset X       0
Port Offset Y       240
->Connect Type     >>
    
```

Select the connection mode, the setting is same with Port U. Then connection of both the Port D and Port U of One Sending Card to LED Screen is finished.

Rendering is as follows:



## 3.7 Capture LOGO

1. Push the signal button, and select the input signal.
2. Push the [SCALE] button, turn the rotary knob or numeric keys to set the size and position of the LOGO.

```
->H Size      1857
  V Size      1080
  H/V Size    1857
  H Pos       0
```

```
->V Pos       0
  Scaling Mode FULL
  Reset       >>
```

3. Push the [MENU] button and enter to the menu items, turn the rotary knob and select <Logo>:

```
Transition    >>
  System      >>
->Logo        >>
  Display Setup >>
```

4. Push the rotary knob to confirm. Turn the rotary knob again, select <Capture Logo>, and set "Capture Logo" as "Enable":

```
->Capture Logo  Enable
  Logo Present  Logo 1
```

Capture logo will finished after a few seconds.



## 3.8 Using LOGO Button

Push the [LOGO] button, user can set the test pattern, the settings are as follows:

|                |        |
|----------------|--------|
| ->Type         | H RAMP |
| Raster Box     | OFF    |
| Diag Motion    | OFF    |
| AOI Raster Box | >>     |

**Type:** Select the type of the Test Pattern to be displayed. Options are:

LOGO: Video frame captured as in the LOGO.

RAMPS: H RAMP, V RAMP.

COLOR BARS: 100% COL BAR, 75% COL BAR, SMPTE COL BAR.

GRIDS: 16\*16 GRID, 32\*32 GRID, BURST.

GRAYS: 50% GRAY, GRAY STEP1, GRAY STEP2, WHITE, BLACK.

**Raster Box:** Enable or disable the raster box function. If raster box is "ON", the border is shown around the image, which is for testing.

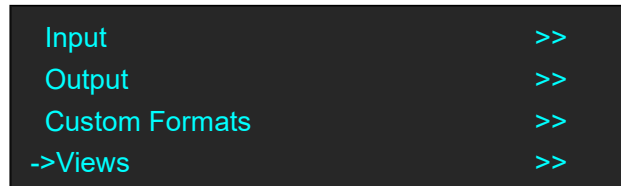
**Diag Motion:** Enable or disable Diagonal Motion of the selected test pattern.

**AOI Raster Box:** If Raster Box (above) is "ON", size settings in this menu for Box X, Box Y, Box Width and Box Height are displayed. Select Reset to restore default settings. AOI raster box will display for all signals except LOGO (Test Pattern).

## 3.9 Saving Views

D2 provides 22 positions for saving or recording parameters. To save current parameters and settings:

1. Push the [MENU] button to enter to the menu items, turn the rotary knob, select <Views>, push the rotary knob to confirm.



2. Turn the rotary knob, and select <Save>, push the rotary knob to confirm.



3. Turn the rotary knob, and select the location that need to save, push the rotary knob to confirm.



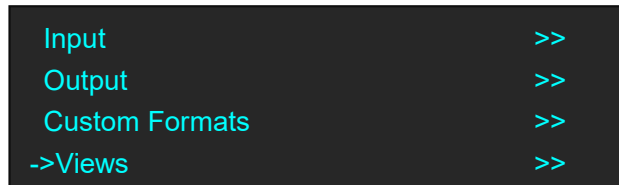
### Note

If position 1 is saved, this will be recalled and loaded at power on.

## 3.10 Recall Saved Settings

D2 provides 22 positions for saving or recording parameters. To recall saved settings:

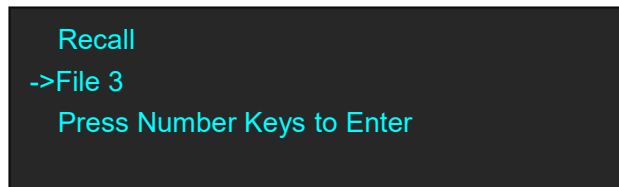
1. Push the [MENU] button to enter to the menu items, turn the rotary knob, select <Views>, push the rotary knob to confirm.



2. Turn the rotary knob, and select <Recall>, push the rotary knob to confirm.



3. The button on is ready for recall, and button flashes means just recall. Push the button on or turn the rotary knob to select the location that need to recall, push the rotary knob to confirm.



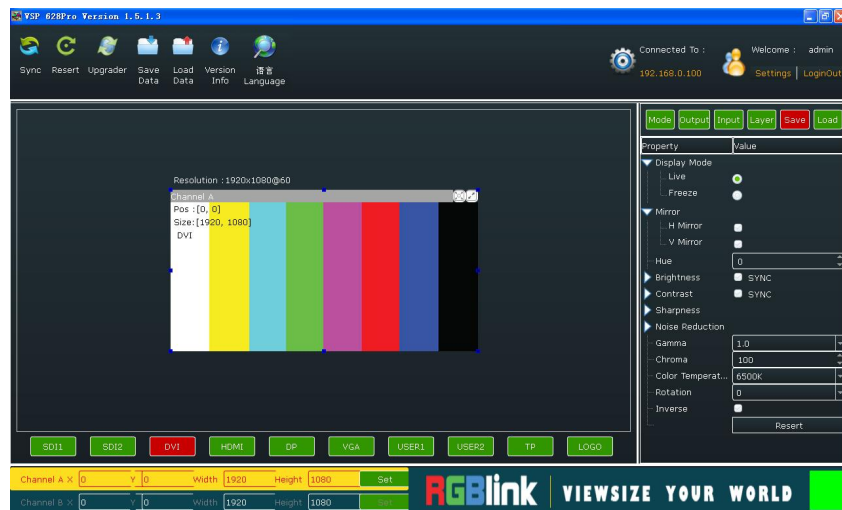
### Note

User can only recall File 1 to File 10 by pushing the button. Beyond File 10, please select the file by the rotary knob.

# Chapter 4 Controlling Your Processor Remotely

## 4.1 Using the Windows Control Program

Install the software on a Windows computer, launch the application.



### 4.1.1 Set up Communication

First, connect the D2 to the computer with the network cable or USB cable, and boot the device.



Then, click the connection icon and enter to the software interface as below:



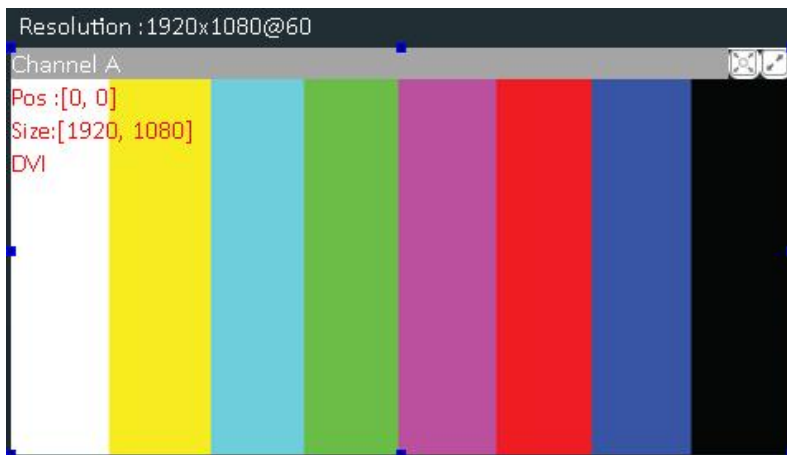
Finally, select Ethernet or USB connect, click “Ok”, and finish connecting.

The green square in the bottom right means the connection is successful, white red is not.

## 4.1.2 Use

### Image Toolbar

Show the image information, including resolution, channel, position, size and the signal. The image size will be changed when set the parameters.



### Signal Select

Click the signal icon, and the output image will be switched to the selected signal.



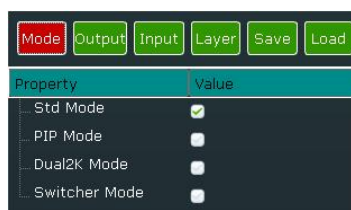
### Scale

Select Channel A or Channel B, and scale the image by adjusting X, Y, Width and Height according to actual need. Click “Set” after finish.



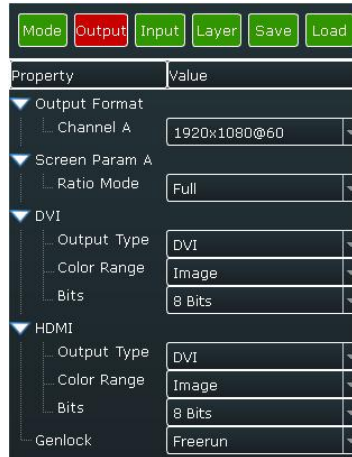
### Mode

Click “Mode”, and enter to the interface as below. D2 supports Std mode, PIP Mode, Dual 2K Mode, Switcher Mode and Split Mode. User should select Std Mode before choose PIP Mode, or it will not be shown on the interface.

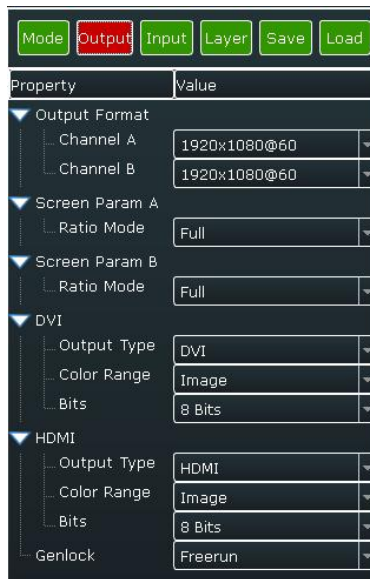


## Output

Click “Output”, and enter to the interface as below if select Std mode, PIP Mode and Switcher Mode.



Click “Output”, and enter to the interface as below if choose Dual 2K Mode.

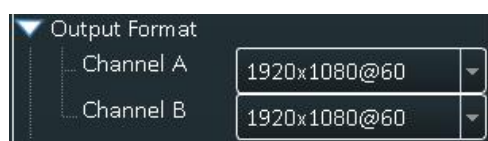


### Output Format

Select the output format of CHA by selecting from scrolling down list.



Select the output formats of CHA and CHB by selecting from scrolling down list if choose Dual 2K Mode.



### Screen Parameter

Select the ratio mode of Screen Param A by selecting from scrolling down list, including Full, Same with Input, 3:2, 4:3, 5:4 and 16:9.



Select the ratio mode of Screen Param A and Screen Param B if choose Dual 2K Mode.



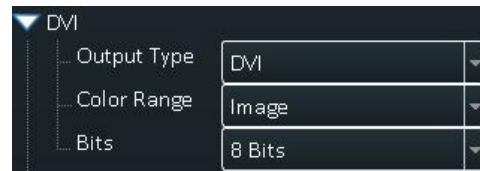
## DVI

DVI setting, including output type, color range and Bits.

Output Type: Can select DVI or HDMI, system default DVI output, HDMI signal output will enable when HDMI option checked.

Color Range: Can select image or video.

Bits: Set the image bits, system default DVI is 8 bits.



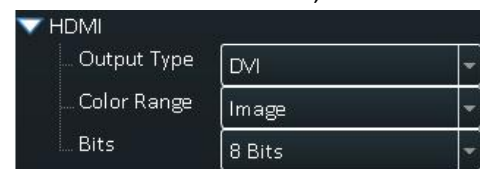
## HDMI

HDMI setting, including output type, color range and Bits.

Output Type: Can select DVI or HDMI.

Color Range: Can select image or video.

Bits: Set the image bits, system default HDMI is 10 bits, user can select 8 bits or 12 bits.



## Genlock

Use can enable or disable the genlock function, and set external and input signal genlock.

## Input

Click "Input", and enter to the interface as below:



### Input Format

Read the current input format.



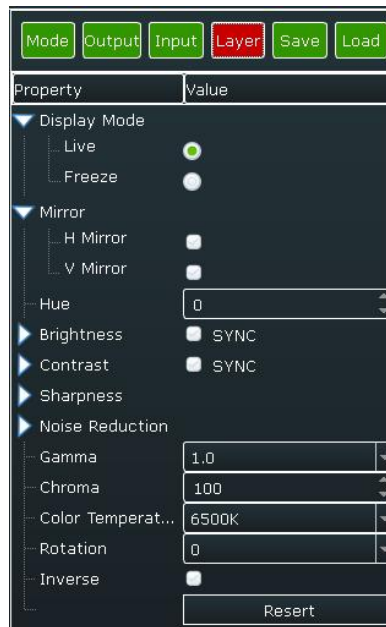
### Color Space

Select the color space, including RGB, YUV4:2:2, YUV4:4:4 and Auto.



### Layer

Click “Layer”, and enter to the interface as below:



### Display Mode

Select the display mode as live or freeze.





### Mirror

Select H Mirror or V Mirror.



### Hue

Set the hue of the image according to actual need, the adjustment range is -180~180.



### Brightness

Set the brightness, including red, green and blue. If select "SYNC", when drag one color, the other two color values will change accordingly to the same value. The adjustment range is -512~512.



### Contrast

Set the contrast, including red, green and blue. If choose "SYNC", when drag one color, the other two color values will change accordingly to the same value. The adjustment range is 0~399.



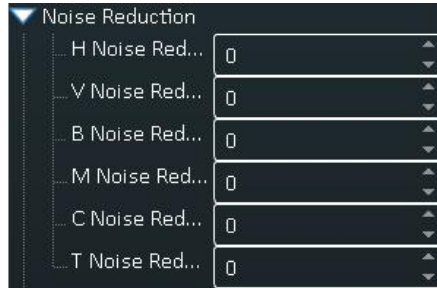
### Sharpness

Set the H sharpness and V sharpness according to actual need, the adjustment range is -10~10.



### Noise Reduction

User can do noise reduction processing for the image, which including H Noise Reduction, V Noise Reduction, B Noise Reduction, M Noise Reduction, C Noise Reduction and T Noise Reduction. The adjustment range is 0~3.



### Gamma

Enable the gamma function and set the gamma value by selecting from scrolling down list.



### Chroma

Set the chroma of the image according to actual need. The adjustment range is 0~399.



### Color Temperature

Set the color temperature of the image according to actual need, user can select 3200K, 6500K and 9300K.



### Rotate

Set the rotate of the image according to actual need, user can select -90, 0 and 90.



### Inverse

User can enable or disable the inverse function.



### Reset

If image quality distorts by improper operation, it can be recover by reset.

#### Note

All the settings above are only for the selected channel, and for preview channel in switcher mode.

### Save

Click "Save", and enter to the interface as below. D2 supports 22 positions to save the parameters. Click the save mode according to actual need.

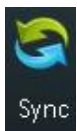


## Load

Click “Load”, and enter to the interface as below. D2 supports 22 kinds of saving modes for recall. Click the save mode to load the saved parameters.



## Other



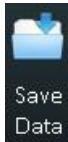
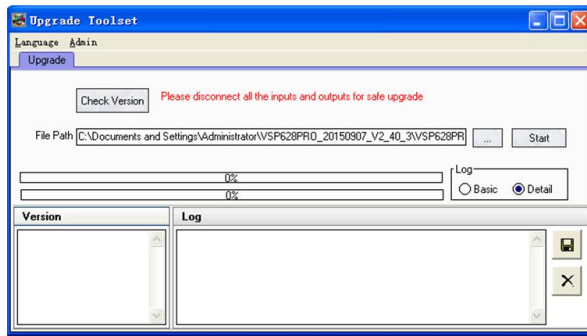
**Sync**: Read the current parameters of D2.



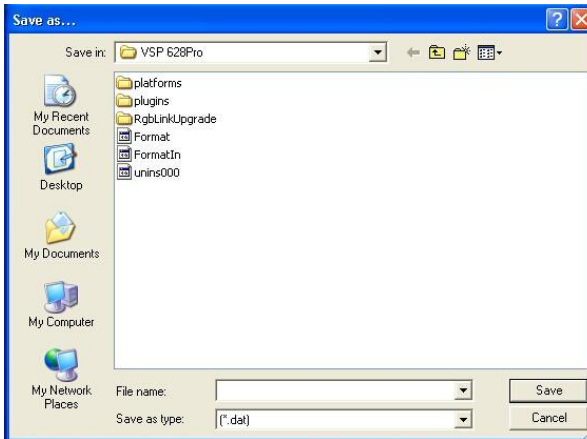
**Reset**: Reset the factory settings.



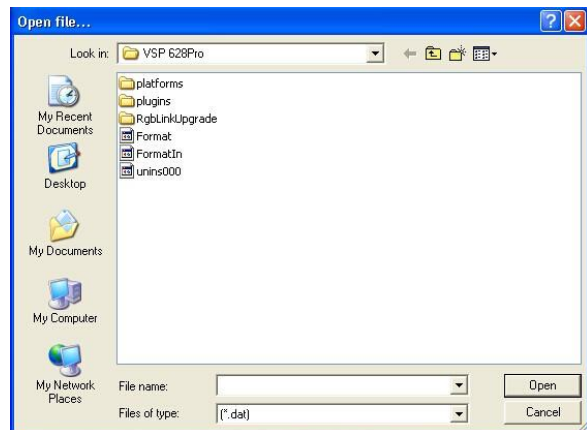
**Upgrader**: Upgrade the device, and user can clear the log.



: Save the data to the computer hard drive.

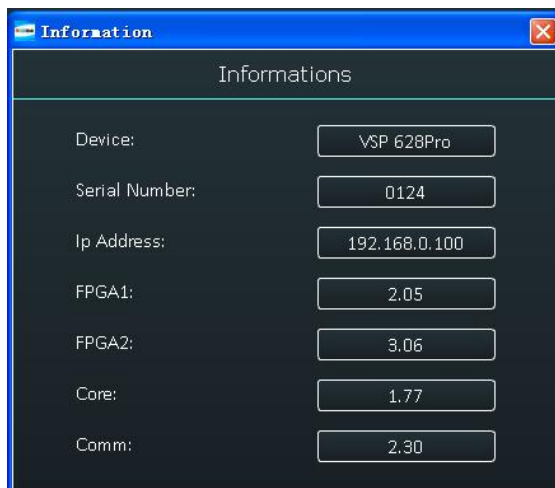


: Load the data from the computer.





: Show the device version information.



: This software supports both Chinese and English, user can switch the language by “Language” option.



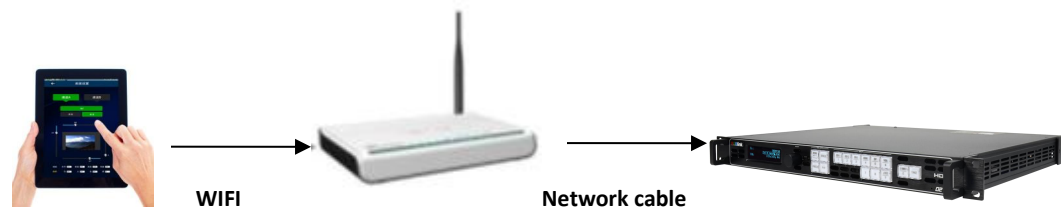
: Operation permissions settings for manager, log in and set the log password of windows control program. D2 V2.0 can not support this function.

## 4.2 Using the D2 App for Android & iOS

### 1. Download the APP

Go to the App Store on your device, search RGBlink and load the D2 App.

### 2. APP Control Interface Introduction



1. Prepare a router that with wireless internet and DHCP function, connect and set the router by computer before connect to D2, and enable the IP and DHCP function. (For more details about setting, please refer to router's instruction).
  2. Connect the LAN port of router to the LAN port of D2 with the network cable.
  3. Connect to the router by IOS or Android device, system default IP automatic access, use the web browser to access "192.168.0.100", the default IP address of D2, if the IP address is changed, please enter the changed IP address. (Set path: MENU->System->Ethernet->IP), user can wirelessly control D2 after loading.
- 1) Make sure the device is connected to the router, power on, after the device is stable, turn on the mobile phone or IPAD APP to search and connect the device, as follows:



- 2) There are 2 device options after connect the device, DEMO is the presentation template that comes with software, choose any one of them, as follows:



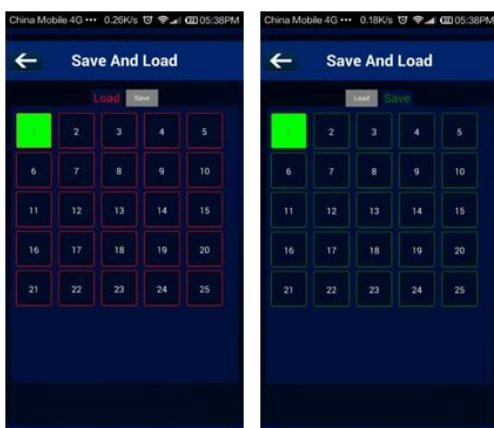
3) After connection, it enters to the processor manager interface, as follows:



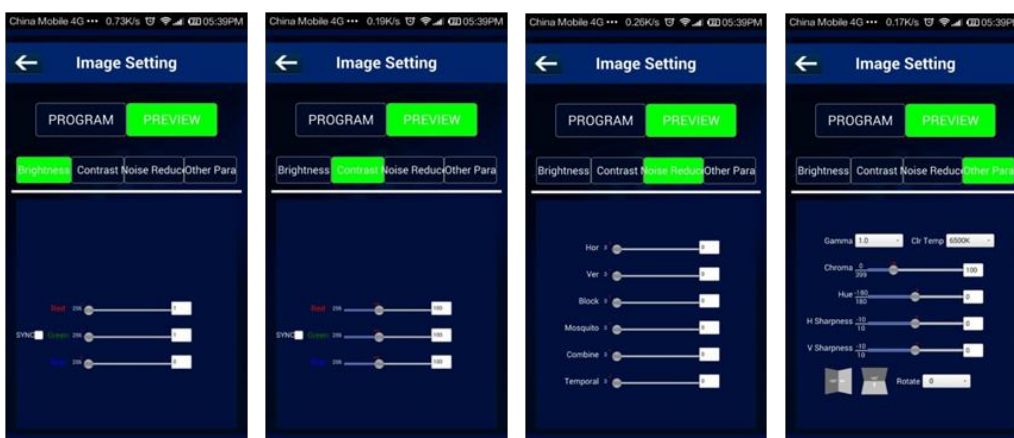
4) Click <Signal Select>, it supports 4 different modes, as follows:



5) Click <Save And Load>, it supports 22 kinds of save modes, as follows:



6) Click <Image Setting>, user can adjust the parameters in preview mode, as follows:

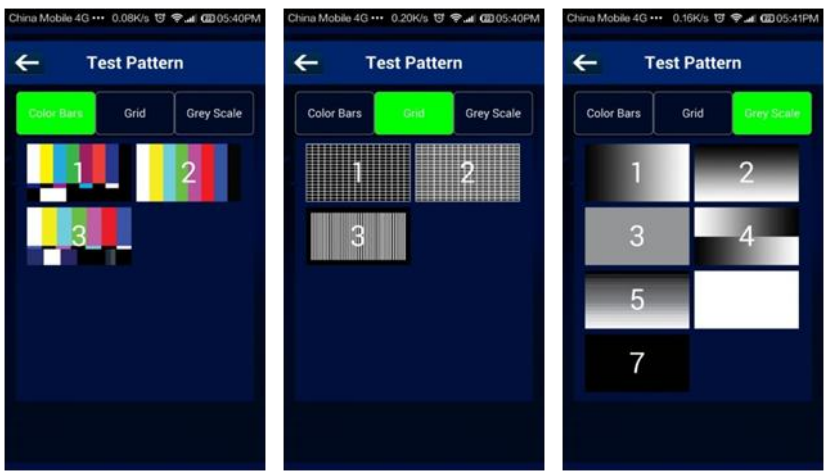


7) Click <Mask And Scale>, user can mask and scale the image, as follows:



8) Click <Test Pattern>, there are 13 kinds of test patterns, as follows:

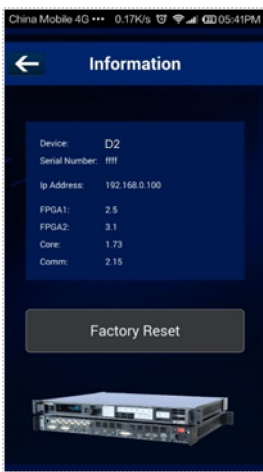




9) Click <Parameter Setting>, user can adjust the output resolution, as follows:



10) Click <Information>, user can view the device mode, serial number, IP address and module versions. User can also click "Factory Reset" to reset to its factory settings.



## 4.3 Connecting to an Ethernet Network

To realize LAN remote control need to build up a LAN platform, include the following:

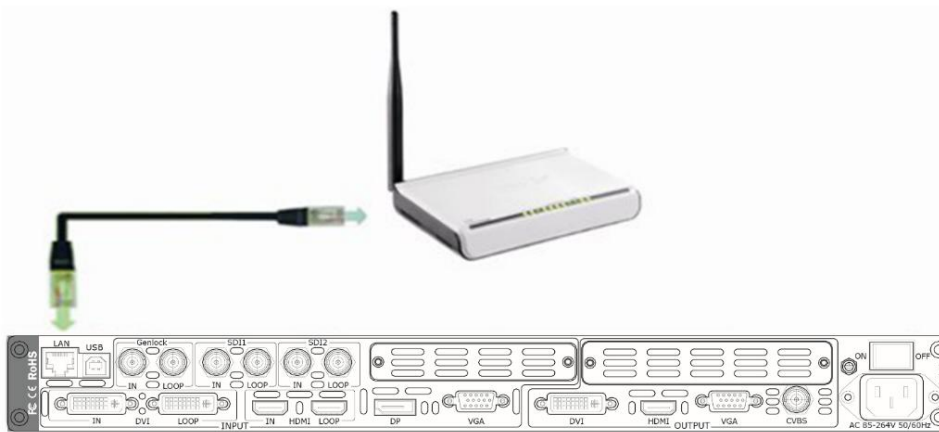
One computer (Laptop or computer, used to do remote control which installed windows control software in the computer).

One router (Better to have wireless function which may realize WEB control cross different platform; without wireless function is available but only realize cable remote control. No limitation for router's model and brand, such as VPN router model: Netcore 255 or 266; Volans VE 760W or 982W).

One D2 processor (as long as the router's network ports can connect to, user can place multi pieces of D2).

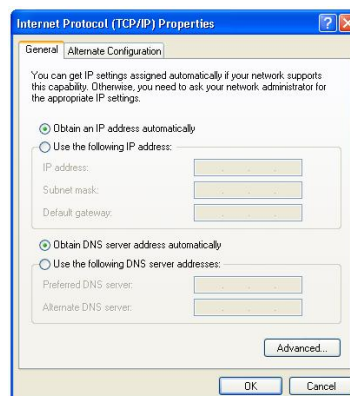
The operations are as follows:

Step one: LAN physical connection. Connect D2 and router with network cable, then connect computer and router with network cable also, use the LAN port of router, WAN port is used for connecting to outer net. Sketch map as below:



Step two: IP address setting (processor's default IP address is 192.168.0.100)

Firstly change computer's local connection to "automatically getting the IP", showed as below:



Secondly refer to router's instruction (user manual, specification), and find out router's default network segment.

If router's default network segment is 192.168.0.1, then it is same to processor IP address

segment, open up windows control software and user can directly control on D2.

If router's default network segment is 192.168.1.1, then user need to change router's default gateway or change processor's IP, both methods are available, but we suggest to change processor's IP.

Method one: Change processor's IP.

Push the [MENU] button on front panel and go into items as below picture shows. Change processor's IP to be 192.168.1.100, confirm and restart the processor, then user can control on D2 via windows control software.

Method two: Change router's gateway.

Type in 192.168.1.1 on the browser and go into router setting.



Type in default account and code (please refer to the router user manual for the information).

Go to router setting part and find out "LAN port setting", change the default value "192.168.1.1" to be "192.168.0.1".

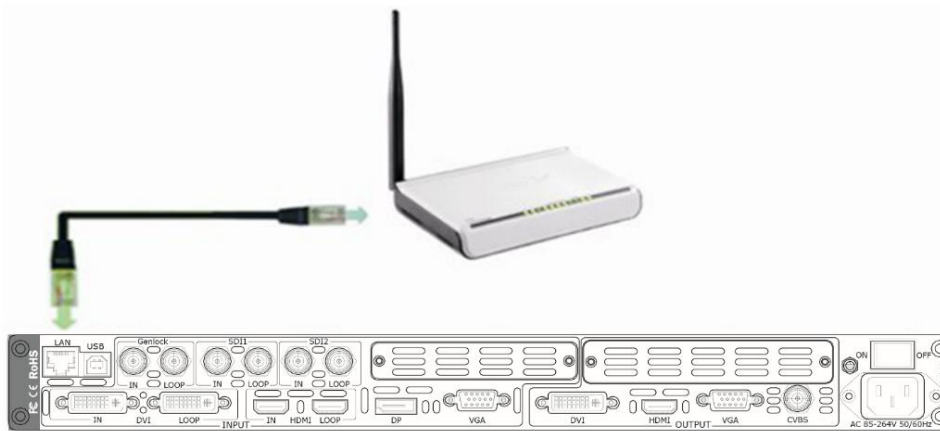
Save the setting and restart the router, then user can control on D2 via windows control software.

## 4.4 Using a D2 with WEB Option

First, the formation of LAN Remote Control Platform: one Ipad or one Iphone, one router (with wireless functions, for example with a wireless-enabled VPN router models: Netcore 255 and 266. Volans VE760W, 982W.), one D2 processor (can be more processors, as long as the network interface can be connected to the router)

The first step: LAN Physical Connection: connect D2 and routers by CAT5, and connect routers by CAT5, please use the LAN Ethernet port, WAN port is only used to connect to external networks, it's not allowed to use in this step.

Connection diagram is as below:



The second step: IP address setup. Please refer to IP Setup steps which in the “[Connecting to an Ethernet Network](#)” section. (Make sure that processors IP address and router IP address are in the same band.)

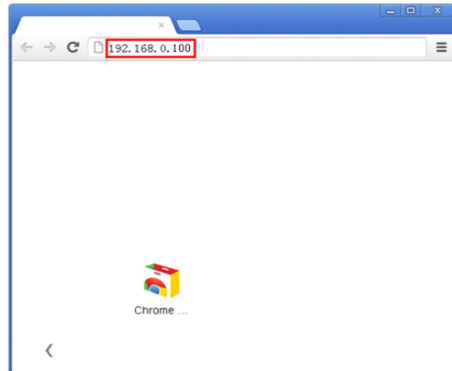
When users use Ipad or Iphone, use can use the Safari browser, enter the URL 192.168.0.100 (default) and run. If user using other types of devices will need to install the kernel **webkit browser** such as: **Apple Safari, Google Chrome or Maxthon browser**. The Installing package will provide Google Chrome browser (windows version).

**Note:** Internet Explorer, Edge and Firefox are not supported.

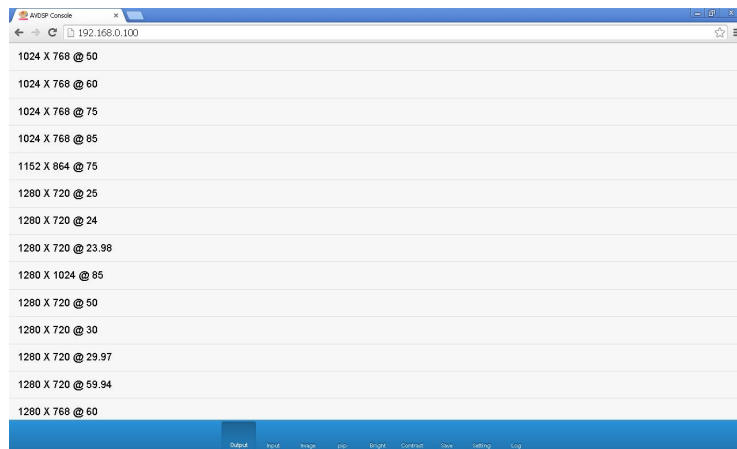
The third step: Make connections.



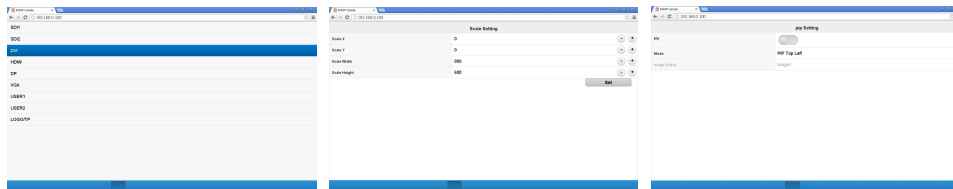
Click icon, run Google Chrome browser, open the page to enter 192.168.0.100 (default) and run.



After connection successfully, Web page appears as D2 system control interface.



Click on the toolbar below the control interface, then accesses setup menu, now WEB control on D2 is available.



---

## Chapter 5 Ordering Codes

---

### 5.1 Product

|               |       |
|---------------|-------|
| 100-0628-05-0 | D2    |
| 100-0628-05-1 | D2 OS |

### 5.2 Options

|               |                                                                 |
|---------------|-----------------------------------------------------------------|
| 190-0628-01-0 | Dual CVBS/Composite Input Module<br>2 × CVBS                    |
| 190-0628-02-0 | Dual USB Input Module<br>2 × USB                                |
| 190-0628-03-0 | Dual VGA Input Module<br>2 × VGA                                |
| 190-0628-04-0 | Dual HDMI Input Module<br>2 × HDMI                              |
| 190-0628-05-0 | Dual DVI Input Module<br>2 × DVI                                |
| 190-0628-06-0 | Dual SDI Input/Loop Module<br>2 × BNC for 3G-SDI each with loop |

#### 5.2.2 Output Options

|               |                                                                  |
|---------------|------------------------------------------------------------------|
| 190-0628-21-0 | SDI / Fiber / HDBaseT Output Module<br>1 × Fiber + SDI + HDBaseT |
|---------------|------------------------------------------------------------------|

#### 5.2.3 Accessories

|             |                    |
|-------------|--------------------|
| RCRCPJ00011 | DVI to VGA adapter |
|-------------|--------------------|

### 5.3 Sender Cards

|             |             |
|-------------|-------------|
| RCRCPJ00090 | Linsn TS801 |
| RCRCPJ00091 | Linsn TS802 |

|             |                |
|-------------|----------------|
| RCRCPJ00110 | Nova MSD300    |
| RCRCPJ00112 | Nova MSD600    |
| RCRCFJ00133 | Colorlight iT7 |

# Chapter 6 Support

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## 6.1 Questions and Troubleshooting

### 6.1.1 OLED Screen Prompts “No Core Board”

|                           |                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | OLED Screen prompts "No Core Board"                                                                                                                                                                                                                                                                                                                                      |
| Troubleshooting           | <b><u>Upgrade the Device</u></b><br>Please visit our website or contact our sales for device program upgrade package and upgrade guide to upgrade the device.                                                                                                                                                                                                            |
|                           | <b><u>Confirm if the White Winding on Communication Board is Loose</u></b><br>If upgrade repair can't solve this problem, please power off the device, take apart the top panel and remove four screws on core board, check if the white winding on the end of the communication board is loose, or take out it to clean and install it again.                           |
|                           | <b><u>Confirm If the Core Board is Loose</u></b><br>If it is not ok yet, please take out the core board, clean the interface and install it again. Make sure it is fasten and then power on for test. This operation need professional person. Make sure the electrostatic protection and electric shock protection. If it cannot solve again, please contact our sales. |

### 6.1.2 No Display on LED Screen when Output HDMI to Sending Card, DVI Monitors or DVI Projectors

|                           |                                                                                                                                                                                                                                                                                                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | No Display on LED Display when Output HDMI to Sending Card, DVI Monitors or DVI Projectors                                                                                                                                                                                                                           |
| Troubleshooting           | <b><u>Set DVI for HDMI Output Format</u></b><br>Some sending cards cannot support HDMI signal format. User need to set DVI for HDMI output format, operations are as follows: push the [MENU] button, then choose <OUTPUT>, turn the knob and choose <Color Space/Sample/Bit>, choose the HDMI output format as DVI. |

### 6.1.3 Flash Point on LED Display when Output

|                           |                                        |
|---------------------------|----------------------------------------|
| Frequently Asked Question | Flash Point on LED Display when Output |
|---------------------------|----------------------------------------|



|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Troubleshooting | <p><b><u>Change the DVI Cable or HDMI Cable</u></b></p> <p>There is flash point on LED display when input sending card because of the DVI cable quality of good and bad are intermingled, which cause the sending card internal signal attenuation. Please change the 30~40CM DVI short cable. If there is HDMI input port on sending card, please change the HDMI cable with HDMI adapter, or DVI to HDMI cable, then connect the DVI output or HDMI output to the HDMI input.</p> |
|                 | <p><b><u>Add the Long-term Signal Amplify and Interface Protection Module</u></b></p> <p>Please contact our sales to buy the long-term signal amplify and interface protection module from our company, which can lengthen the transmission distance to 15M, and protect the output interface.</p>                                                                                                                                                                                  |

### 6.1.4 Android or iOS APP cannot Connect

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | Android or iOS APP cannot Properly Connected in Mobile Phone or Tablet Computer                                                                                                                                                                                                                                                                                                                                                                                                            |
| Troubleshooting           | <p><b><u>Confirm if the Device Install the Web Server Module</u></b></p> <p>Confirm if the @ icon on the OLED module is white background and black text or black background and white text. If black background and white text, the device doesn't install the Web Server module, and without the APP and network control function. If necessary, please contact our sales to buy.</p>                                                                                                     |
|                           | <p><b><u>Confirm if the Web Server Module Driver is Normal</u></b></p> <p>Push the [MENU] button, and choose &lt;Tech Support&gt;, turn the knob to choose &lt;Version&gt;, and confirm if show the Web COM/Web Server version number, if show (N/A), it means the device doesn't install the Web Server module, or the module driver is not normal. If it has installed the Web Server module, please contact our sales for the module driver or the driver installation instruction.</p> |
|                           | <p><b><u>Confirm if IP Conflict for Mobile Phone, Wireless Router and Device</u></b></p> <p>System default the device IP is 192.168.0.100, please check if the IP of wireless router is inconsistent with this IP, the IP will conflict if consistent, and unable to search the device and normal connection. Please change the device IP address, and make sure it is in the same network segment.</p>                                                                                    |

### 6.1.5 VGA Input Offset or cannot be Full Size Shown

|                           |                                                                                                                                                                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | VGA Input Offset or cannot be Full Size Shown                                                                                                                                                                                                                                              |
| Troubleshooting           | <p><b><u>Set Auto Adjust for VGA Input</u></b></p> <p>Push the [MENU] button, then choose &lt;INPUT&gt;, turn the knob and choose &lt;VGA ADJUST&gt;, push the knob to confirm. Turn the knob and choose &lt;AUTO ADJUST&gt;, the auto adjust time is about 10 seconds. If auto adjust</p> |

|  |                                                                   |
|--|-------------------------------------------------------------------|
|  | cannot solve the problem, please manually adjust in <VGA ADJUST>. |
|--|-------------------------------------------------------------------|

### 6.1.6 Show Blurred Screen when Rotate for I System Input

|                           |                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | Show Blurred Screen when Rotate for I System Input                                                                                         |
| Troubleshooting           | <b><u>Change the Input as P System</u></b><br>D2 can not currently support the I system input rotate, please change the input as P system. |

### 6.1.7 Can't Do Split for I System Input

|                           |                                                                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | Can't Do Split for I System Input                                                                                                                                           |
| Troubleshooting           | <b><u>Change the Input as P System</u></b><br>D2 can not currently support the I system split, please change the input as P system, or choose the dual 2K mode to do split. |

### 6.1.8 Show black Lines or Blurred Screen for DP Input

|                           |                                                                                                                                                                                                                                                                                                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | Show Black Lines or Blurred Screen for DP Input                                                                                                                                                                                                                                                                      |
| Troubleshooting           | <b><u>Switch the Signal Again</u></b><br>The LED screen shows the black lines or blurred screen because of the reasons such as some DP input resolutions, change the input resolution or system default DP. Please push the [DP] button again to confirm or switch to the other signal and then switch to DP signal. |

### 6.1.9 Show Upgrade Error after Upgrade MCU Program

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | Show Upgrade Error after Upgrade MCU Program                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Troubleshooting           | <b><u>Upgrade the Program Again</u></b><br>D2 only needs to upgrade the package after upgrade the program, and only for some old version devices need to upgrade the MCU program. Once upgrade the MCU program, the OLED panel will show writing tip during upgrading. Except it, the others don't need to upgrade the MCU program.<br>If user upgrade the MCU program first, the device will can't be started. User need to contact our customer service for the version 2.13 package and upgrade to the latest package. |

## 6.1.10 Software Upgrade Failed

|                           |                                                                                                                                                                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequently Asked Question | Software Upgrade Failed                                                                                                                                                                                                                                                                                                   |
| Troubleshooting           | <b><u>Processing Bar Stops at About 90%</u></b><br>If processing bar stops at about 90% during <code>_xx_Packge_xx.bin</code> , please use <code>_xx_MCU_xx.bin</code> . After that, no need to upgrade <code>_xx_Packge_xx.bin</code> . (Please disconnect the input and output before upgrade).                         |
|                           | <b><u>Processing Bar Stops at About 30%</u></b><br>If processing bar stops at about 30% during <code>_xx_Packge_xx.bin</code> , please use <code>_xx_MCU_xx.bin</code> . After upgrade <code>_xx_MCU_xx.bin</code> , re-upgrade <code>_xx_Packge_xx.bin</code> . (Please disconnect the input and output before upgrade). |

## 6.2 Contact Us

[www.rgblink.com](http://www.rgblink.com)



### Inquiries

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|                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                           |                                                                                                                                            |                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|

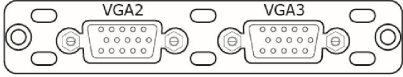
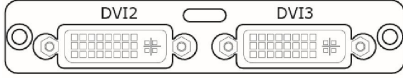
## Chapter 7 Appendix

### 7.1 Specification

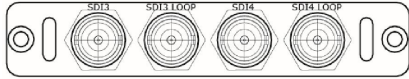
| <b>Genlock Input (Standard)</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of Inputs                 | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                        | Standard BNC Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Supported Standards              | 480i I 576i I 1080i59.94 I 1080i50 I 720p50 I 720p59.94 I 1080p50 I 1080p59.94 I 1080p60 I 1080psf23.98 I 1080psf24                                                                                                                                                                                                                                                                                                                                                                         |
| <b>3G-SDI Input (Standard)</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Inputs                 | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                        | BNC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Data Rate                        | 2.97Gb/s, 2.97/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s and 270Mb/s                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Supported Standard               | SMPTE 425M - 3G Level A and Level B Formats                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Supported Resolution             | SMPTE 425M (3G Level A) 4:2:2: 1920×1080/60 (1:1) I 1920×1080/50 (1:1).<br>SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080/60 (2:1) I 1920×1080/50 (2:1)<br>SMPTE 274M (HD): 1920×1080I/60 (2:1) or 1920×1080/30 (PsF) I 1920×1080I/50 (2:1) or 1920×1080/25 (PsF) I 1920×1080/30 (1:1) I 1920×1080/25 (1:1) I 1920×1080/24 (1:1) I 1920×1080/24 (PsF)<br>SMPTE 125M (SD): 1440×487/60 (2:1)<br>SMPTE ITU-R BT.656 (SD): 1440×576/50 (2:1) Or dual link progressive, 625-line generic. |
| Balance                          | Belden 1694A cable:<br>150m at 2.97Gb/s<br>250m at 1.485Gb/s<br>480m at 270Mb/s                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>VGA DB15 Input (Standard)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Inputs                 | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                        | Standard DB15 Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Supported Standard               | VGA-UXGA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Signal Level                     | R, G, B, Hsync, Vsync: 0 to 1Vpp±3dB (0.7V Video+0.3v Sync ) 75 ohm<br>black level: 300mV Sync-tip: 0V                                                                                                                                                                                                                                                                                                                                                                                      |
| Supported Resolution             | VGA-UXGA (800×600@60 I 1024×768@60 I 1280×1024@60 I 1440×900@60 I 1600×1200@60)                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>DVI Input (Standard)</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Inputs                 | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                        | Standard DVI-D socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Supported Resolution             | SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,                                                                                                                                                                                                                                                                                                                                                                                                         |

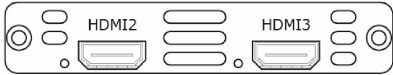


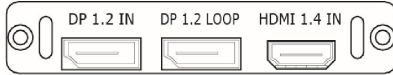
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | 720p50/59.94/60<br>VESA: 800×600@60 I 1024×768@60 I 1280×768@60 I<br>1280×1024@60 I 1600×1200@60 I 1920×1080@60                                                                                                                                                                                                                                                                                                                                                                             |
| Signal Level                       | TMDS pwl, single pixel input, 165MHz bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Format Standard                    | DVI 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>DP Input (Standard)</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Inputs                   | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                          | DisplayPort                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Supported Resolution               | Support resolution: WQXGA + (1920 x 1200), and color depth: 30/36 bit (each primary 10/12 bit)                                                                                                                                                                                                                                                                                                                                                                                              |
| Supported Bandwidth                | 10.8Gb/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Format Standard                    | DP1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>HDMI Input (Standard)</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Inputs                   | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                          | HDMI standard type A interface                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Supported Resolution               | SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60<br>VESA: 800×600@60 I 1024×768@60 I 1280×768@60 I<br>1280×1024@60 I 1600×1200@60 I 1920×1080@60                                                                                                                                                                                                                                                                                      |
| Embedded Audio Channels            | Select one from the two inputs                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Format Standard                    | HDMI 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Genlock Loop Out (Standard)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Loop Out                 | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                          | Standard BNC Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Supported Standards                | 480i I 576i I 1080i59.94 I 1080i50 I 720p50 I 720p59.94 I 1080p50 I<br>1080p59.94 I 1080p60 I 1080psf23.98 I 1080psf24                                                                                                                                                                                                                                                                                                                                                                      |
| <b>3G-SDI Loop Out (Standard)</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Loop Out                 | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                          | BNC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Data Rate                          | 2.97Gb/s, 2.97/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s and 270Mb/s                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Supported Standard                 | SMPTE 425M - 3G Level A and Level B Formats                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Supported Resolution               | SMPTE 425M (3G Level A) 4:2:2: 1920×1080/60 (1:1) I 1920×1080/50 (1:1).<br>SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080/60 (2:1) I 1920×1080/50 (2:1)<br>SMPTE 274M (HD): 1920×1080I/60 (2:1) or 1920×1080/30 (PsF) I 1920×1080I/50 (2:1) or 1920×1080/25 (PsF) I 1920×1080/30 (1:1) I 1920×1080/25 (1:1) I 1920×1080/24 (1:1) I 1920×1080/24 (PsF)<br>SMPTE 125M (SD): 1440×487/60 (2:1)<br>SMPTE ITU-R BT.656 (SD): 1440×576/50 (2:1) Or dual link progressive, 625-line generic. |


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Balance                         | Belden 1694A cable:<br>150m at 2.97Gb/s<br>250m at 1.485Gb/s<br>480m at 270Mb/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>HDMI Loop Out (Standard)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of Loop Out              | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Connector                       | HDMI standard type A interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Supported Resolution            | SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60<br>VESA: 800×600@60 I 1024×768@60 I 1280×768@60 I<br>1280×1024@60 I 1600×1200@60 I 1920×1080@60                                                                                                                                                                                                                                                                                                                                                              |
| Embedded Audio Channels         | Select one from the two inputs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Format Standard                 | HDMI 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>DVI Loop Out (Standard)</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of Loop Out              | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Connector                       | Standard DVI-D socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Supported Resolution            | SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60<br>VESA: 800×600@60 I 1024×768@60 I 1280×768@60 I<br>1280×1024@60 I 1600×1200@60 I 1920×1080@60                                                                                                                                                                                                                                                                                                                                                              |
| Signal Level                    | TMDS pwl, single pixel input, 165MHz bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Format Standard                 | DVI 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>HDMI Output (Standard)</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of Outputs               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Connector                       | HDMI standard type A interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Supported Resolution            | SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60<br>1280×720@23.98 I 1280×720@24 I 1280×720@25 I 1280×720@29.97<br>I 1280×720@30 I 1920×1080@23.98 I 1920×1080@24 I<br>1920×1080@25 I 1920×1080@29.97 I 1920×1080@30.<br>VESA:<br>800×600@60 I 1024×768@60 I 1024×768@75 I 1024×768@85 I<br>1280×720@60 I 1280×768@60 I 1280×800@60 I 1280×1024@60 I<br>1360×768@60 I 1366×768@60 I 1400×1050@60 I 1440×900@60 I<br>1600×1200@60 I 1680×1050@60 I 1920×1080@60 I 1920×1200@60<br>I 2048×1152@60 I 2560×816@60 |
| Format Standard                 | HDMI 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>VGA Output (Standard)</b>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of Outputs               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |


|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector                              | Standard DB15 Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Supported Resolution                   | VESA:<br>800×600@60 I 1024×768@60 I 1024×768@75 I 1024×768@85 I<br>1280×720@60 I 1280×768@60 I 1280×800@60 I 1280×1024@60 I<br>1360×768@60 I 1366×768@60 I 1400×1050@60 I 1440×900@60 I<br>1600×1200@60 I 1680×1050@60 I 1920×1080@60 I 1920×1200@60<br>I 2048×1152@60 I 2560×816@60                                                                                                                                                                                                                                                                                |
| Signal Level                           | R, G, B, Hsync, Vsync: 0 to1Vpp±3dB (0.7V Video+0.3v Sync ) 75 ohm<br>black level: 300mV Sync-tip: 0V                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>DVI Output (Standard)</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Number of Outputs                      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Connector                              | Standard DVI-D Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Signal Level                           | TMDS pw, 165MHz bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Supported Resolution                   | SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60<br>1280×720@23.98 I 1280×720@24 I 1280×720@25 I 1280×720@29.97<br>I 1280×720@30 I 1920×1080@23.98 I 1920×1080@24 I<br>1920×1080@25 I 1920×1080@29.97 I 1920×1080@30.<br>VESA:<br>800×600@60 I 1024×768@60 I 1024×768@75 I 1024×768@85 I<br>1280×720@60 I 1280×768@60 I 1280×800@60 I 1280×1024@60 I<br>1360×768@60 I 1366×768@60 I 1400×1050@60 I 1440×900@60 I<br>1600×1200@60 I 1680×1050@60 I 1920×1080@60 I 1920×1200@60<br>I 2048×1152@60 I 2560×816@60 |
| <b>VGA Input (VGA Optional Module)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Interface Appearance                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Board Size                             | 93.8(L)×17(W) (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Number of Inputs                       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Connector                              | Standard DB15 Socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Supported Standard                     | VGA-UXGA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Signal Level                           | R、G、B、Hsync、Vsync:0 to1Vpp±3dB (0.7V Video+0.3v Sync ) 75 ohm<br>black level: 300mV Sync-tip: 0V                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Supported Resolution                   | VGA-UXGA (800×600@60 I 1024×768@60 I 1280×1024@60 I<br>1440×900@60 I 1600×1200@60)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>DVI Input (DVI Optional Module)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Interface Appearance                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Board Size                             | 93.8(L)×17(W) (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Number of Inputs                       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Connector                              | Standard DVI-D socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |




|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supported Resolution                      | SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60<br>VESA: 800×600@60 I 1024×768@60 I 1280×768@60 I<br>1280×1024@60 I 1600×1200@60 I 1920×1080@60                                                                                                                                                                                                                                                                                      |
| Signal Level                              | TMDS pwl, single pixel input, 165MHz bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Format Standard                           | DVI 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>3G-SDI Input (SDI Optional Module)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Interface Appearance                      |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Board Size                                | 93.8(L)×17(W) (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>3G-SDI Input</b>                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Inputs                          | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                                 | BNC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Data Rate                                 | 2.97Gb/s, 2.97/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s and 270Mb/s                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Supported Standard                        | SMPTE 425M - 3G Level A and Level B Formats                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Supported Resolution                      | SMPTE 425M (3G Level A) 4:2:2: 1920×1080/60 (1:1) I 1920×1080/50 (1:1).<br>SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080/60 (2:1) I 1920×1080/50 (2:1)<br>SMPTE 274M (HD): 1920×1080I/60 (2:1) or 1920×1080/30 (PsF) I 1920×1080I/50 (2:1) or 1920×1080/25 (PsF) I 1920×1080/30 (1:1) I 1920×1080/25 (1:1) I 1920×1080/24 (1:1) I 1920×1080/24 (PsF)<br>SMPTE 125M (SD): 1440×487/60 (2:1)<br>SMPTE ITU-R BT.656 (SD): 1440×576/50 (2:1) Or dual link progressive, 625-line generic. |
| Balance                                   | Belden 1694A cable:<br>150m at 2.97Gb/s<br>250m at 1.485Gb/s<br>480m at 270Mb/s                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>3G-SDI Loop Out</b>                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Number of Loop Out                        | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Connector                                 | BNC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Data Rate                                 | 2.97Gb/s, 2.97/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s and 270Mb/s                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Supported Standard                        | SMPTE 425M - 3G Level A and Level B Formats                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Supported Resolution                      | SMPTE 425M (3G Level A) 4:2:2: 1920×1080/60 (1:1) I 1920×1080/50 (1:1).<br>SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080/60 (2:1) I 1920×1080/50 (2:1)<br>SMPTE 274M (HD): 1920×1080I/60 (2:1) or 1920×1080/30 (PsF) I 1920×1080I/50 (2:1) or 1920×1080/25 (PsF) I 1920×1080/30 (1:1) I 1920×1080/25 (1:1) I 1920×1080/24 (1:1) I 1920×1080/24 (PsF)<br>SMPTE 125M (SD): 1440×487/60 (2:1)<br>SMPTE ITU-R BT.656 (SD): 1440×576/50 (2:1) Or dual link                                |

|                                          |                                                                                                                                                                                                        |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          | progressive, 625-line generic.                                                                                                                                                                         |
| Balance                                  | Belden 1694A cable:<br>150m at 2.97Gb/s<br>250m at 1.485Gb/s<br>480m at 270Mb/s                                                                                                                        |
| <b>HDMI Input (HDMI Optional Module)</b> |                                                                                                                                                                                                        |
| Interface Appearance                     |                                                                                                                       |
| Board Size                               | 93.8(L)×17(W) (mm)                                                                                                                                                                                     |
| Number of Inputs                         | 2                                                                                                                                                                                                      |
| Connector                                | HDMI standard type A interface                                                                                                                                                                         |
| Supported Resolution                     | SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60<br>VESA: 800×600@60 I 1024×768@60 I 1280×768@60 I<br>1280×1024@60 I 1600×1200@60 I 1920×1080@60 |
| Embedded Audio Channels                  | Select one from the two inputs                                                                                                                                                                         |
| Format Standard                          | HDMI 1.3                                                                                                                                                                                               |
| <b>USB Input (USB Optional Module)</b>   |                                                                                                                                                                                                        |
| Interface Appearance                     |                                                                                                                     |
| Board Size                               | 93.8(L)×17(W) (mm)                                                                                                                                                                                     |
| Number of Inputs                         | 2                                                                                                                                                                                                      |
| Connector                                | USB standard type A interface                                                                                                                                                                          |
| Supported Standard                       | Support general Image and video formats                                                                                                                                                                |
| <b>CVBS Input (CVBS Optional Module)</b> |                                                                                                                                                                                                        |
| Interface Appearance                     |                                                                                                                     |
| Board Size                               | 93.8(L)×17(W) (mm)                                                                                                                                                                                     |
| Number of Inputs                         | 2                                                                                                                                                                                                      |
| Supported Standard                       | PAL/NTSC                                                                                                                                                                                               |
| Signal Level                             | 1Vpp±3db (0.7V Video+0.3v Sync ) 75 ohm                                                                                                                                                                |
| Multiplex                                | 480i, 576i                                                                                                                                                                                             |
| <b>HDMI_DP_4K2K_IN Optional Module</b>   |                                                                                                                                                                                                        |
| Interface Appearance                     |                                                                                                                     |
| Board Size                               | 93.8(L)×17(W) (mm)                                                                                                                                                                                     |
| DP Input                                 |                                                                                                                                                                                                        |
| Number of Inputs                         | 1                                                                                                                                                                                                      |
| Connector                                | DisplayPort                                                                                                                                                                                            |
| Supported Resolution                     | VESA: 3840×2160×24 I 3840×2160×25 I 3840×2160×30<br>SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,                                                                                                        |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | 1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Supported Bandwidth             | 21.6Gb/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Format Standard                 | DP 1.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| DP Loop Out                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Number of Loop Out              | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Connector                       | DisplayPort                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Supported Resolution            | VESA: 3840×2160×24 I 3840×2160×25 I 3840×2160×30<br>SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60                                                                                                                                                                                                                                                                                                                                                |
| Supported Bandwidth             | 21.6Gb/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Format Standard                 | DP 1.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| HDMI Input                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Number of Inputs                | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Connector                       | HDMI standard type A interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Supported Resolution            | VESA: 3840×2160×24 I 3840×2160×25 I 3840×2160×30<br>SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC,<br>1080P50/59.94/60 I 1080i50/59.94/60,<br>720p50/59.94/60                                                                                                                                                                                                                                                                                                                                                |
| Format Standard                 | HDMI 1.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>F Output Optional Module</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Interface Appearance            |                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Board Size                      | 114(L)×19.7(W) (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3G-SDI Output                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Number of outputs               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Connector                       | BNC interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Signal level                    | 800mV±10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Supported Standard              | SMPTE 425M - 3G Level A and Level B Formats                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Supported Resolution            | SMPTE 425M (3G Level A) 4:2:2: 1920×1080/60 (1:1),<br>1920×1080/50 (1:1).<br>SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080/60 (2:1) I<br>1920×1080/50 (2:1)<br>SMPTE 274M (HD): 1920×1080I/60 (2:1) or 1920×1080/30 (PsF) I<br>1920×1080I/50 (2:1) or 1920×1080/25 (PsF) I 1920×1080/30 (1:1) I<br>1920×1080/25 (1:1) I 1920×1080/24 (1:1) I 1920×1080/24 (PsF)<br>SMPTE 125M (SD): 1440×487/60 (2:1)<br>SMPTE ITU-R BT.656 (SD): 1440×576/50 (2:1) Or dual link<br>progressive, 625-line generic. |
| Equalization                    | Belden 1694A 100m HD 1.485G, 300m SD 270Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SFP Fiber Output                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Number of outputs               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

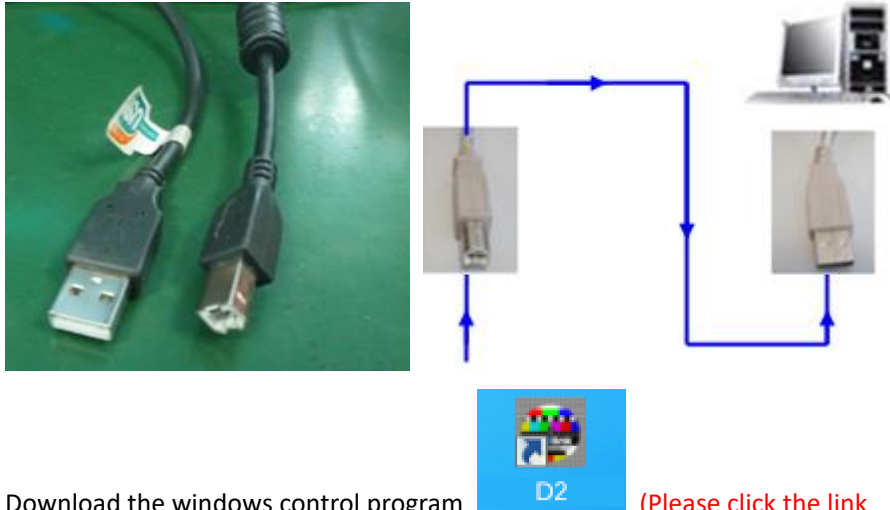
|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connector                                         | LC interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Supported Standard                                | SMPTE standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 10 Gigabit single-mode 10 km optical fiber module |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Wavelength of Light Transmission                  | 1310nm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Transmission Rate                                 | 10G bps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Transmission Distance                             | 10km                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Transmission                                      | Single mode twin-core                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Hot Plug                                          | Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 10 Gigabit multimode 300m optical fiber module    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Wavelength of Light Transmission                  | 1270nm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Transmission Rate                                 | 10G bps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Transmission Distance                             | 300km                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Transmission                                      | Multimode twin-core                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Hot Plug                                          | Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| HDBaseT Output                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Number of outputs                                 | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Connector                                         | RJ45 Interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Supported Standard                                | SMPTE standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Transmission Rate                                 | 10G bps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Transmission Distance                             | 120m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Standard                                          | HDBaseT 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>3G-SDI Output (OS2Optional Module)</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Interface Appearance                              |                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Board Size                                        | 114(L)×19.7(W) (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Number of Outputs                                 | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Connector                                         | BNC interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Signal level                                      | 800mV±10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Supported Standard                                | SMPTE 425M - 3G Level A and Level B Formats                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Supported Resolution                              | SMPTE 425M (3G Level A) 4:2:2: 1920×1080/60 (1:1) I<br>1920×1080/50 (1:1).<br>SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080/60 (2:1) I<br>1920×1080/50 (2:1)<br>SMPTE 274M (HD): 1920×1080I/60 (2:1) or 1920×1080/30 (PsF) I<br>1920×1080I/50 (2:1) or 1920×1080/25 (PsF) I 1920×1080/30 (1:1) I<br>1920×1080/25 (1:1) I 1920×1080/24 (1:1) I 1920×1080/24 (PsF)<br>SMPTE 125M (SD): 1440×487/60 (2:1)<br>SMPTE ITU-R BT.656 (SD): 1440×576/50 (2:1) Or dual link<br>progressive, 625-line generic. |
| Equalization                                      | Belden 1694A 100m HD 1.485G, 300m SD 270Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>CVBS Output (OC Optional Module)</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                             |                                                                                   |
|-----------------------------|-----------------------------------------------------------------------------------|
| Interface Appearance        |  |
| Board Size                  | 114(L)×19.7(W) (mm)                                                               |
| Number of Outputs           | 1                                                                                 |
| Standard                    | PAL/NTSC                                                                          |
| Signal Level                | 1Vpp±3db (0.7V Video+0.3v Sync) 75ohm                                             |
| <b>Function</b>             |                                                                                   |
| Input channel configuration | Support each input channel signal programming configuration                       |
| PIP                         | Support PIP、PBP for any two inputs                                                |
| Transition effects          | Fade in and fade out switching between any two inputs                             |
| <b>Extras</b>               |                                                                                   |
| Communication               | USB TCP/IP                                                                        |
| Power Supply                | 85-264V IEC-3                                                                     |
| Working Environment         | 0°C~45°C                                                                          |
| Stored Environment          | 10% to 90%                                                                        |
| Product Warranty            | 3 years parts and labor warranty                                                  |

## 7.2 Software Upgrade

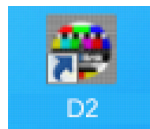
### Windows Control Program Upgrade Guideline

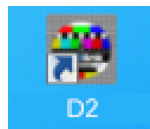
1. Connect D2 to PC via USB cable.

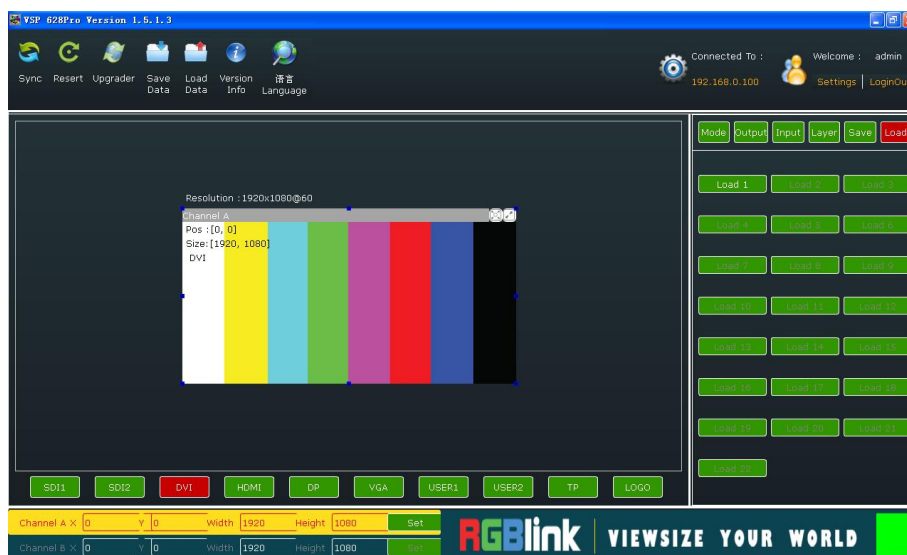


2. Download the windows control program [http://www.rgblink.cn/en/products\\_detail.aspx?id=261](http://www.rgblink.cn/en/products_detail.aspx?id=261) (Please click the link [http://www.rgblink.cn/en/products\\_detail.aspx?id=261](http://www.rgblink.cn/en/products_detail.aspx?id=261) to the D2 home page, and click the “Download” option to get the windows control program).  
The name of the upgrade software is VSPD2\_Packge\_XX.bin.

3. Power on D2.



4. Open the windows control program , like below:



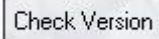
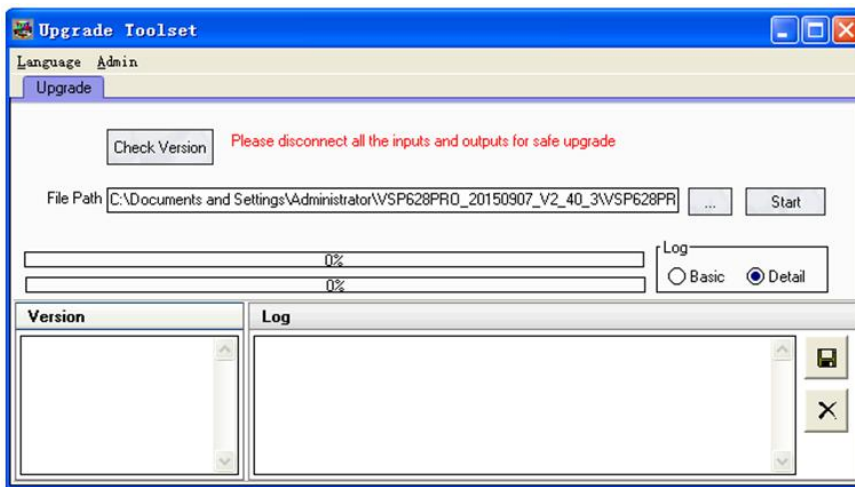


5. Click the Sync icon, which show the information of the windows control program. The green square in the bottom right means the connection is successful, like

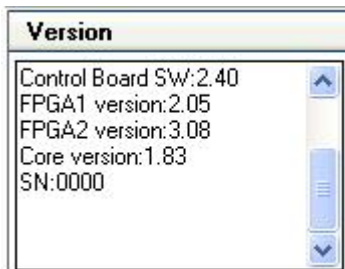
this: , while red is disconnect.




6. Click update icon, and open the upgrade toolset, like below:



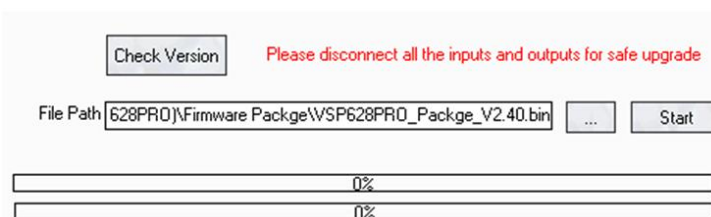
7. Click check version icon, and check the version information



(If the Control Board SW version is 2.13 or lower, it needs to upgrade VSPD2\_EDID\_XX.bin)

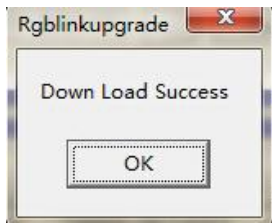
8. Click the button , and choose the upgrade path, get the update file:

D2\_Packge\_Bata\_xx.bin ready. Like below:



9. Click start icon  to upgrade.

10. It takes 2~3 minutes to finish update. And a message "Down Load Success"



will pop out if finish.

11. Please re-power the D2 after finished update. (Automatically factory reset when re-opening.)

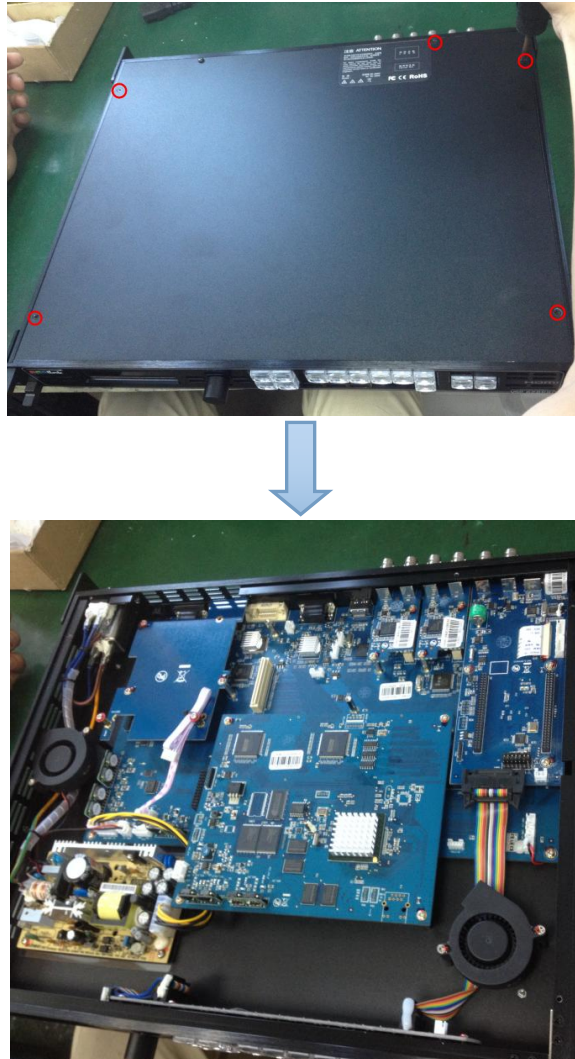


## 7.3 Installing Options

D2 is based on module based structure, user can install or replace the optional module according to actual need. The installation steps are as follows:

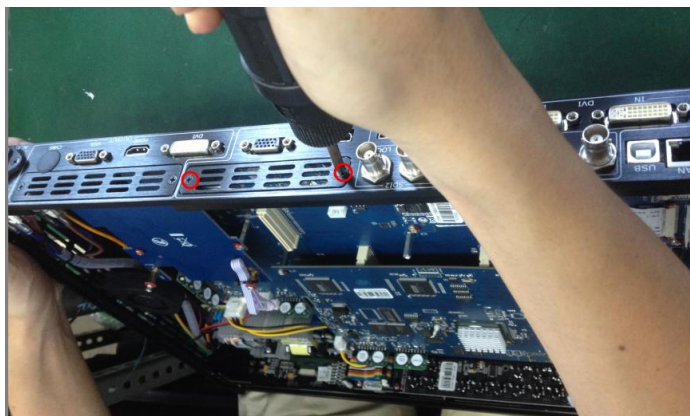
### Install the Optional Module

1. Disconnect the power and all the signal and control cables.
2. Unscrew the 5 fixed screws on the top panel and remove the top panel (Figure 1):



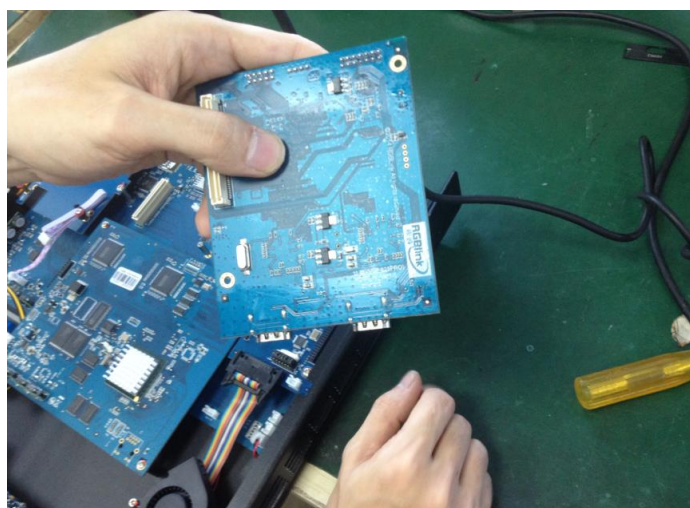
(Figure 1)

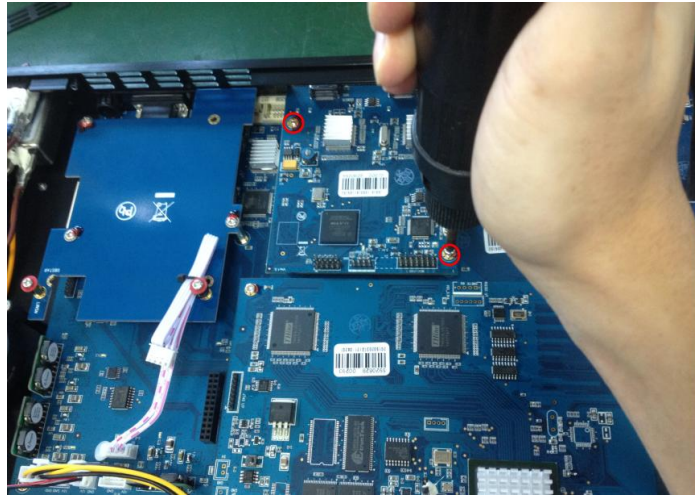
3. Unscrew the 2 fixed screws on input optional module slot, and pull out the input block (Figure 2):



(Figure 2)

4. Push the input module into the input module slot, and fix it with 2 fixed screws (Figure 3):





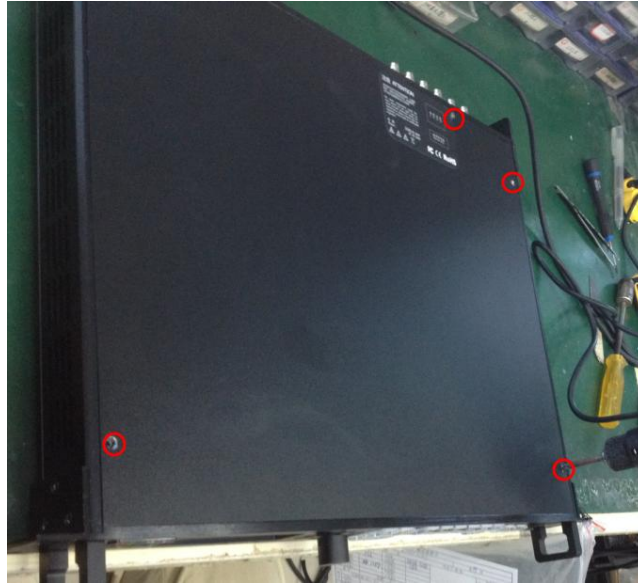
(Figure 3)

5. Embed the input module block in the input module slot, and fix it with 2 fixed screws (Figure 4):



(Figure 4)

6. Assemble the top panel, and fix it with 5 fixed screws that removed in step 2, then optional module installation is finished (Figure 5):



(Figure 5)

**Note:** Above instructions are only for input optional module. For D2, if user would install the output optional module, first, take apart the top panel, and unscrew the 3 fixed screws on sending card board to remove it (Figure 6).



(Figure 6)

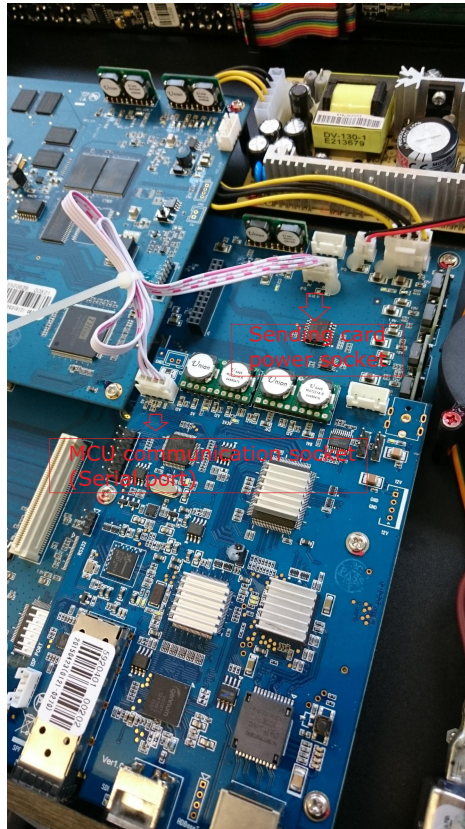
Then unscrew the 2 fixed screws on output optional module, and pull out the output module block (Figure 7).



(Figure 7)

Finally, push the output module into the output module slot, the install steps are the same as step 4 to step 6 in “Install the Optional Module” part.

**Note:** There is the case that some customers connect the power cord of the sending card to the F optional module, shown as Figure 8. This is not allowed to happen, or the F optional module will be damaged.

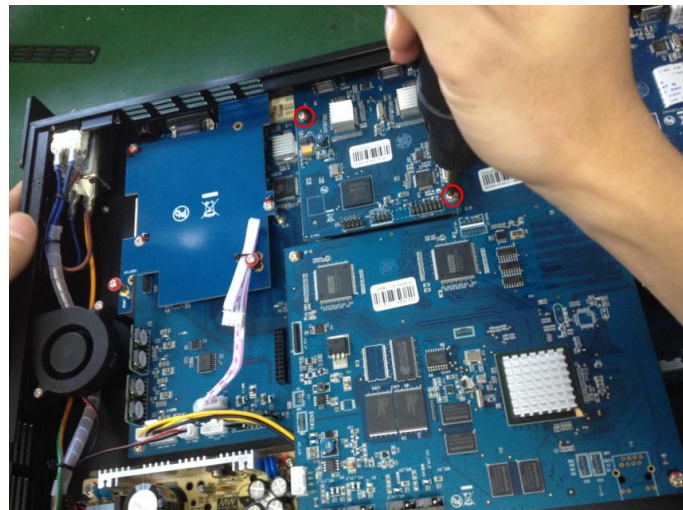


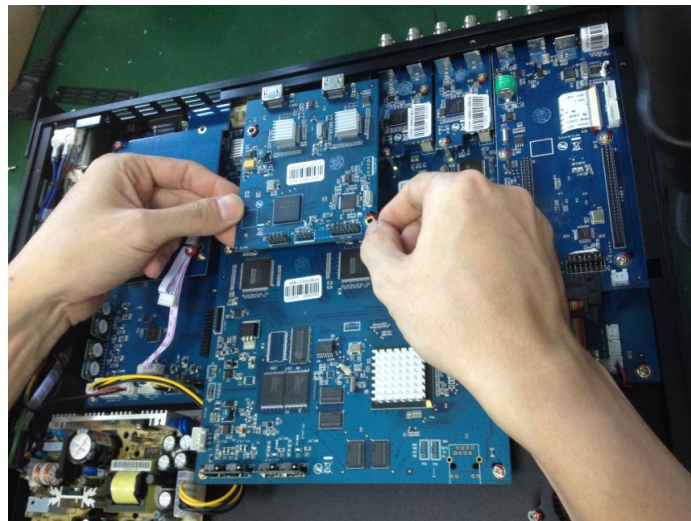
(Figure 8)

### Replace the Optional Module

The install steps for optional module replacement are the same as above, but the following need to note:

1. Take apart the top panel, and unscrew the 2 fixed screws on input optional module to remove it (Figure 9).





(Figure 9)

2. Unscrew the 2 fixed screws on input optional module, and pull out the input module block (Figure 10).



(Figure 10)

3. Push the input module into the input module slot, the install steps are the same as step 4 to step 6 in “Install the **Optional Module**” part.

**Note:** The install steps for output optional module replacement are the same as above.

## 7.4 Terms & Definitions

The following terms and definitions are used throughout this guide.

- **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

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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 (orDP) 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 1920x1080@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.



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● **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 2x2 (original name USB 3.2) with speed up to 5Gbps,10Gbps,20Gbps respectively.

USB version and connectors figure:

|  |      |        |      |      |        |       |        |
|--|------|--------|------|------|--------|-------|--------|
|  | Type | Type B | Mini | Mini | Micro- | Micro | Type C |
|--|------|--------|------|------|--------|-------|--------|

|             | A                                                                                 |                                                                                   | A                                                                                 | B                                                                                 | A                                                                                 | -B                                                                                |                                                                                    |
|-------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 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-horizontal images (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 and 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.

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● **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 broadcast applications.

● **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 8192x4320 may be compressed.

● **API:** An Application Programming Interface (API) provides a predefined function which allows access capabilities and features or routines via a software or hardware, without accessing source code or understanding the details of inner working mechanism. An API call may execute a function and/or provide data feedback/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 electronic musical instruments and latterly

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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 industry include 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.

●**Colour Burst:** 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 a 16:9 ratio, UHD follows the 2K HDTV standard. A UHD 4K display has a physical resolution of 3840x2160 which is four times the area and twice both the width and height of a HDTV/FullHD (1920x1080) 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.

## 7.5 Revision History

The table below lists the changes to the Video Processor User Manual.

| Format | Time       | ECO#  | Description                                                   | Principal |
|--------|------------|-------|---------------------------------------------------------------|-----------|
| V1.0   | 2014-12-02 | 0000# | Release                                                       | Vira      |
| V1.1   | 2015-04-27 | 0001# | 1. Add the input optional module.<br>2. Update the menu tree. | Vira      |

|      |            |       |                                                                                                                                                                                                         |       |
|------|------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
|      |            |       | 3. Update the windows control program.                                                                                                                                                                  |       |
| V1.2 | 2015-06-08 | 0002# | 1. Add the input optional module.<br>2. Update the menu tree.<br>3. Update the windows control program.<br>4. Update the common questions and solutions.                                                | Vira  |
| V1.3 | 2015-07-17 | 0003# | Add “Optional Module Installation and Replacement Instruction”                                                                                                                                          | Vira  |
| V1.4 | 2015-07-27 | 0004# | 1. Update the menu tree.<br>2. Update the windows control program.<br>3. Update the specification.                                                                                                      | Vira  |
| V1.5 | 2015-08-17 | 0005# | 1. Update the company logo.<br>2. Update the split instruction.<br>3. Update the common questions and solutions.                                                                                        | Vira  |
| V1.6 | 2015-09-25 | 0006# | 1. Update the diagram.<br>2. Update the menu tree.<br>3. Update the windows control program.                                                                                                            | Vira  |
| V1.7 | 2015-10-16 | 0007# | 1. Update the windows control program.<br>2. Update the “Software Upgrade”.                                                                                                                             | Vira  |
| V1.8 | 2016-03-10 | 0008# | 1. Update the back panel.<br>2. Update the dimension drawing.<br>3. Update the menu tree.<br>4. Add “How to Realize LED Screen Connection”.<br>5. Update the fax number.<br>6. Update the company logo. | Vira  |
| V1.9 | 2016-04-20 | 0009# | Update the style and structure.                                                                                                                                                                         | Vira  |
| V2.0 | 2016-08-02 | 0010# | 1. Update the cover picture.<br>2. Update the menu tree.<br>3. Update the specification.                                                                                                                | Vira  |
| V2.1 | 2023-12-04 | 0011# | Update order codes                                                                                                                                                                                      | Aster |