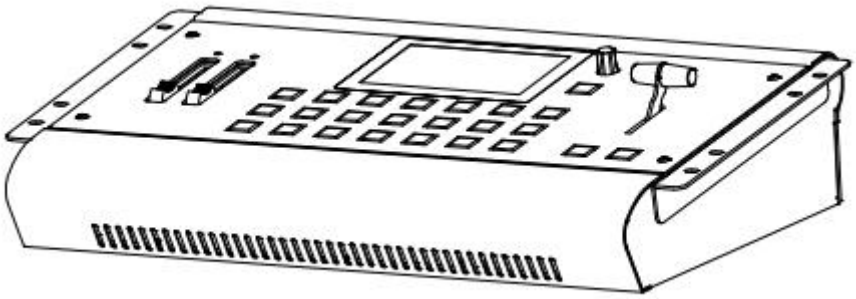
M1



USER MANUAL

RGBlink

Article No: RGB-RD-UM-M1 E001
Revision No: V1.1

CONTENTS

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 M1 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 M1 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 M1 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

AC Power Cable

USB Cable

HDMI to DVI Cable

Network Cable

Screw Driver

Note:

AC Power Cable supplied as standard according to destination market.

1.2 Product Overview

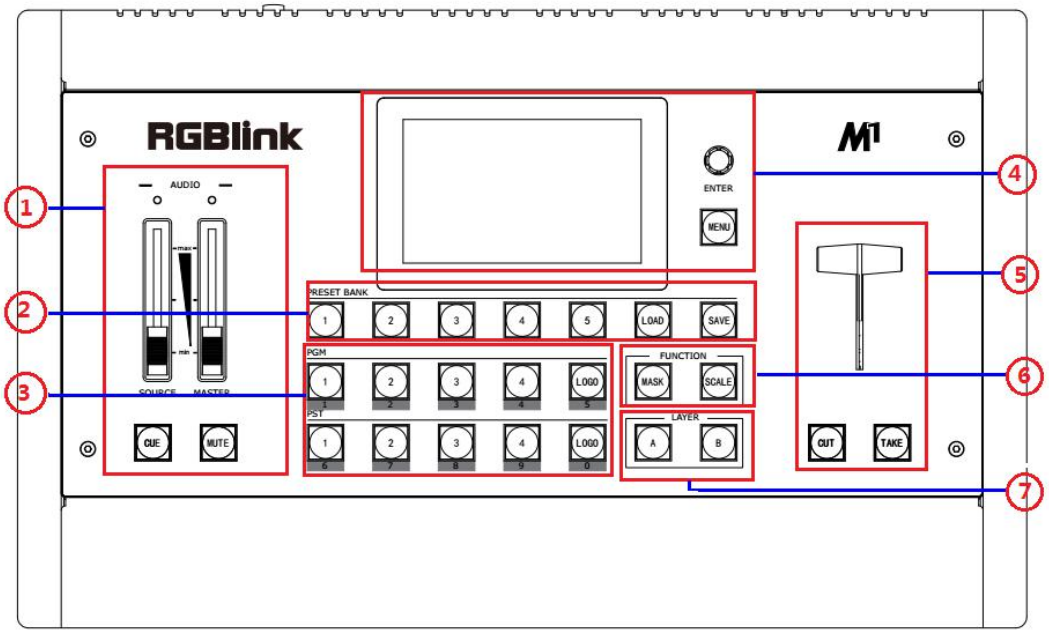
M1 is All-in-one scaling and vision mixing processor.

M1 can up-down cross-covert any input signal to output, which supports 2 layers switching from PVW to PGM. M1 supports Integrated audio. Both LCD touch screen and Menu rotation can be operated. Four input channels are provided in M1. A standard M1 module board with four DVI input signals is fitted. A wide range of configurable options for users is available.

M1 redefines modern hands on scaling and mixing for any environment.

Totally modular and flexible in configuration, M1 is packed with standard features to impress and present with ease.

1.2.1 Front Panel



Panel Instruction			
1	Audio adjustment area	5	Switching modes area
2	Presets operation area	6	Layer function area
3	Input sources area	7	Layer selection area
4	Menu and LCD display area		

Audio Adjustment Area

1	**SOURCE FADER** SOURCE FADER adjusts 4 input signals' voice separately to same volume, ranging from 0~20. **MASTER FADER** MASTER FADER is an amplification-factor of all channel, ranging from 0~10; the volume of four input signals is the number of multiplying SOURCE by MASTER. **CUE** The button of selecting Audio output channel. If the button turns to red color, the current audio output is a layer audio of main output channel. If the button turns to green color, the current audio output is a layer audio of preview channel. **MUTE** MUTE button for audio output, If the button turns to red color, audio is muting on. If the button is white, audio is muting off.

Presets Operation Area

2	**SAVE** Save all current settings supporting 20 savings. **LOAD** Load saving views from 1 to 20. **PAGE** PAGE button is used for save or load, total 5 pages, and 5 banks for each page. **1/2/3/4/5** The button is lit when select PAGE or BANK.

Input Sources Area

3	**PGM Area** For indicating, user can not change the channel or set the size or position in PGM area. Button turns to red when programming. **LOGO** Enable or disable the LOGO function. If select “ON”, user can set the X and Y, or load file from U Disk. **1/2/3/4/5/6/7/8/9/0** Each button is numbered and can be used as direct number. These buttons turn to blue color when used as number key. **PST Area** For indicating, the button turns to yellow color when output the signal in PST channel. For selecting, push any button to switch the PST signal. For editing, button turns to yellow color -- the channel is used and can be edited; button light is off -- the channel is not selected.

Menu and LCD Display Area

4	**MENU** Menu and back/exit button. **SELECT/ENTER** Selection and confirmation button. **LCD Display** This displays current status of the product, and for feature selections providing interactive choices in conjunction with buttons on the Rear Panel.

Switch Mode Area

5	**CUT** Zero delay switching. PST can be switched to PGM seamlessly when push this button. **TAKE** Seamless switching with transition effects. **T-BAR** WIPE and mix switching.

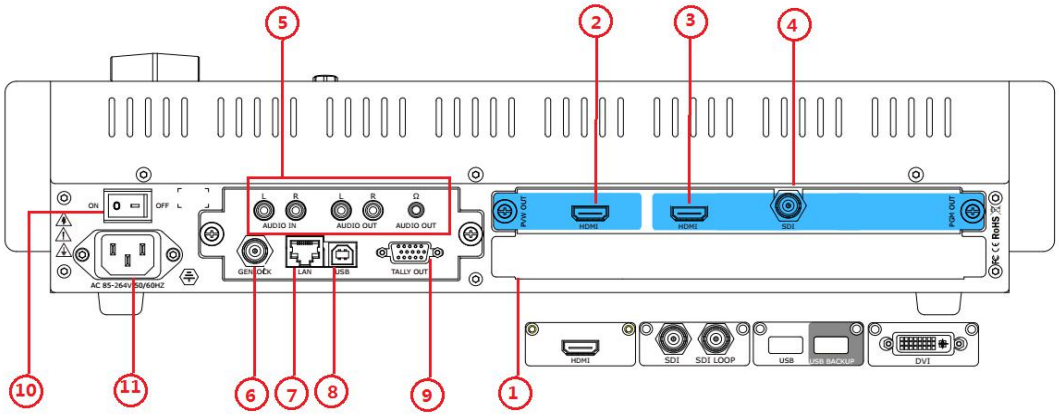
Layer Function Area

6	**Mask** Key the video into special shape including diamond, round, heart, star, triangle and so forth. **SCALE** This button used for size and crop adjusting. If image quality distorts by improper operation, it can be recover by reset.

Layer Selection Area

7	**A/B** These buttons are used for adding or deleting the layer. The button turns to yellow when selecting the layer, green when the layer has been opened, white when deleting the layer.

1.2.2 Rear Panel



Input Interface

Optional Input Module	1	4 input card slots, supports input signals including DVI, HDMI, USB, SDI. Each DVI module supports 1 DVI-I input and compatible CVBS, VGA,YPbPr. Each HDMI module supports 1 HDMI-A input. Each USB module supports 1 USB-B input and 1 USB backup. Each SDI module supports 1 SDI input and 1 SDI loop out.

Output Interface

PVW Output	2	HDMI output
PGM Output	3	HDMI output
	4	SDI output (optional, not standard)

Audio Area

5	Audio In
	Audio Out
	Audio Out(Earphone)

Control Interface

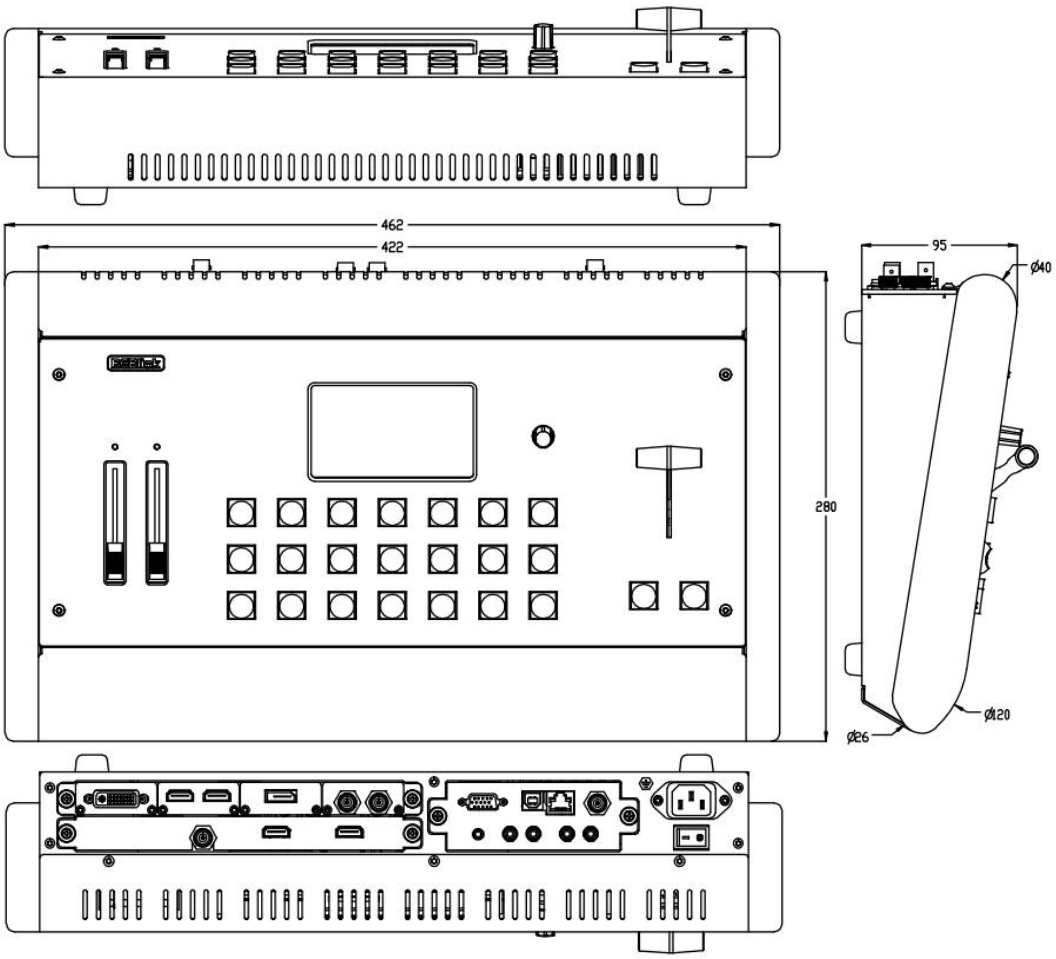
6	Genlock input BNC port
7	LAN port RJ-45
8	USB port USB-A
9	TALLY Light

Power Connection

10	Power Switch
11	AC: 85-264V Power: Max 65W Power Supply Interface: IEC-3

1.2.3 Dimension

Following is the dimension of M1 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.

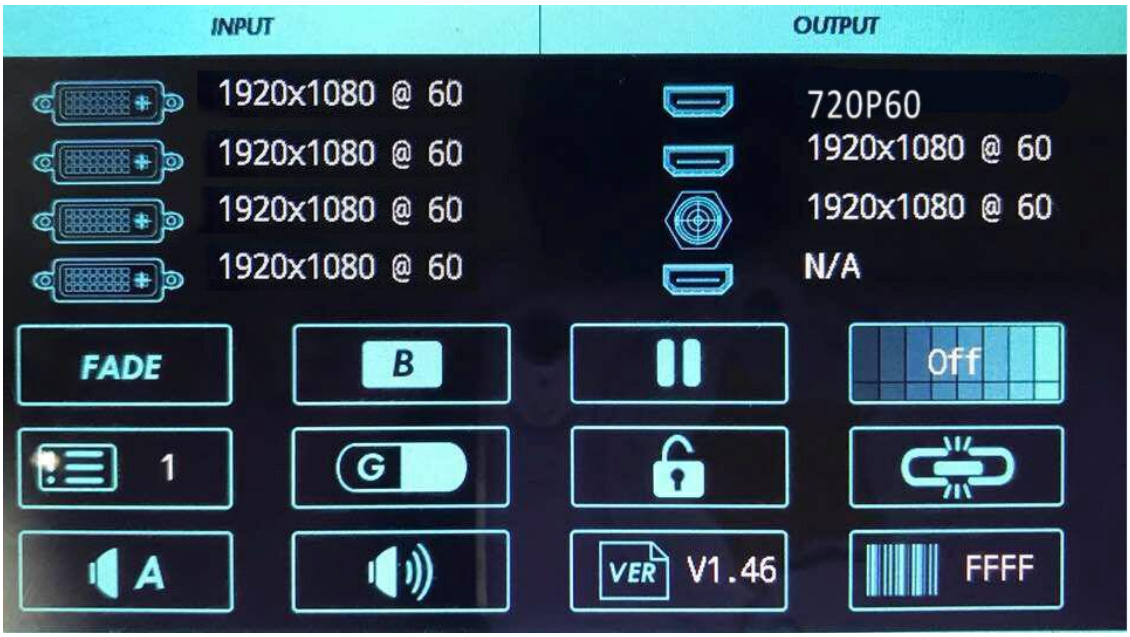
2.2 Plugging in Main Power

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

2.3 Turning on Your Product

Turn on the power switch on the rear panel.

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



Chapter 3 Using Your Product

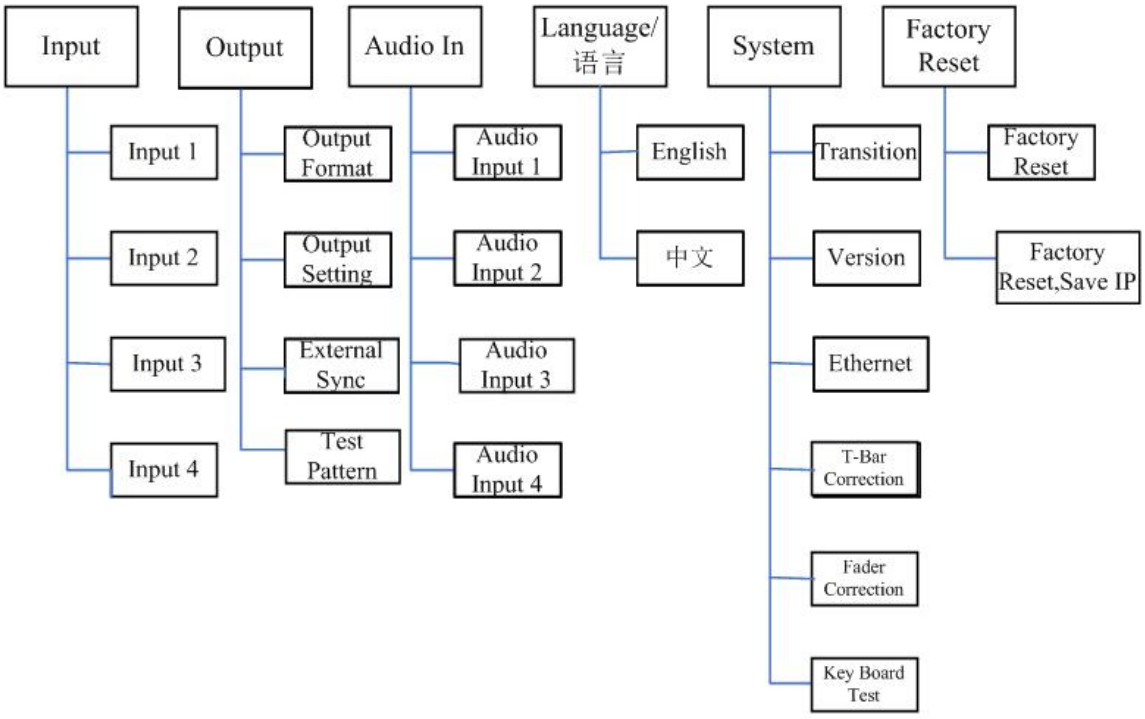
3.1 Using the MENU Button

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

Turn the [ENTER] rotary knob to navigate to the menu item required or touch the icon of LCD screen directly.

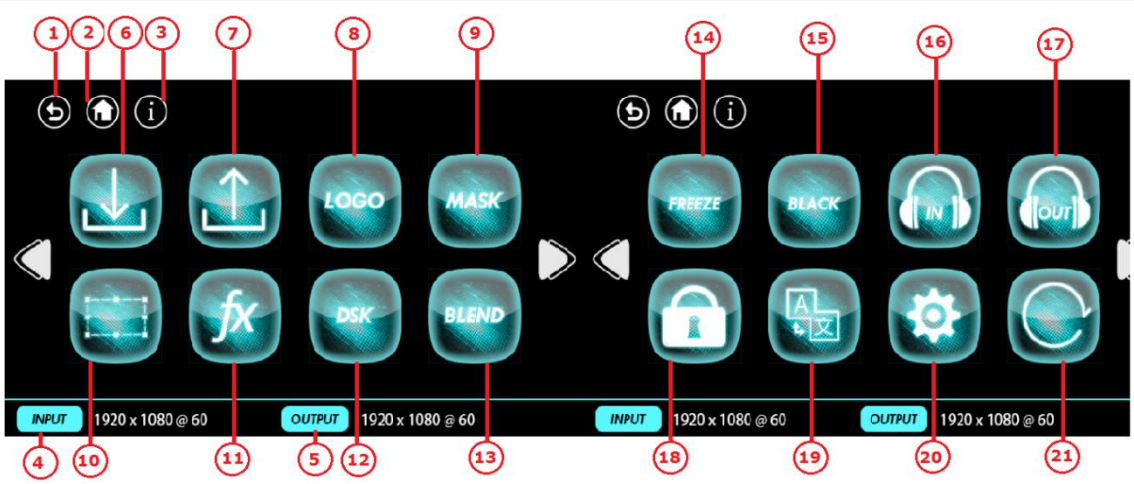
3.2 Understanding the MENU Structure

The MENU structure is shown in the figure below:



3.3 Using the MENU Button

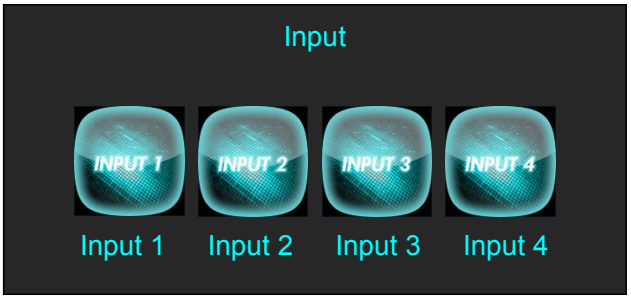
The menu structure is shown on the LCD Screen and in the figure below:



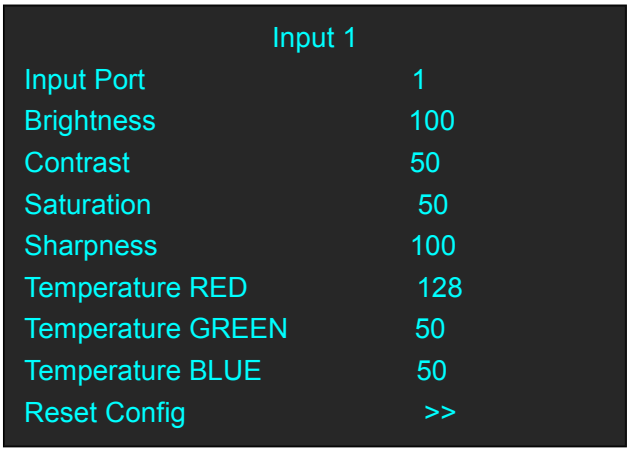
LCD Touch Screen Menu Instruction			
1	Return Button	12	DSK
2	Homepage	13	BLEND
3	Information Page	14	FREEZE
4	Input Resolution Display	15	BLACK
5	output Resolution Display	16	Audio In
6	Input Menu	17	Audio Out
7	Output Menu	18	Lock Front Panel
8	LOGO	19	Language/语言
9	MASK	20	System
10	Scale	21	Factory Reset
11	Transition Effect		

3.3.1 Input Menu

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [Input Menu] option in LCD screen, push the knob or touch the  icon directly to confirm, and enter the menu as follows:



Select any input and enter the menu:

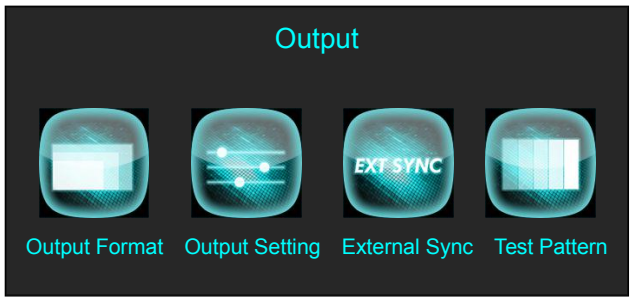


Input Port	Users can select 0 or 1.
Brightness	The adjustment range is from 0 to 100.
Contrast	The adjustment range is from 0 to 100.
Saturation	The adjustment range is from 0 to 100.
Sharpness	The adjustment range is from 0 to 100.
Temperature RED	The adjustment range is from 0 to 128.
Temperature GREEN	The adjustment range is from 0 to 128.
Temperature BLUE	The adjustment range is from 0 to 128.
Reset Config	Reset input parameter.

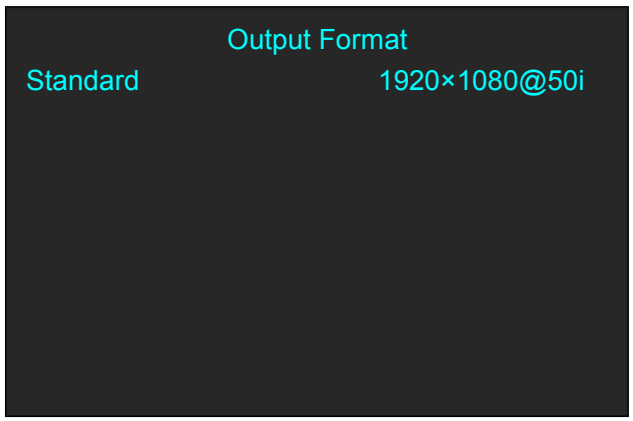
3.3.2 Output Menu

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [Output Menu]

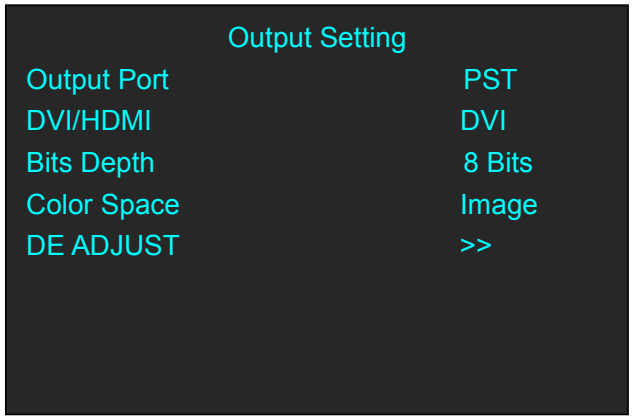
option in LCD screen, push the knob or touch the  icon directly to confirm, and enter the menu as follows:

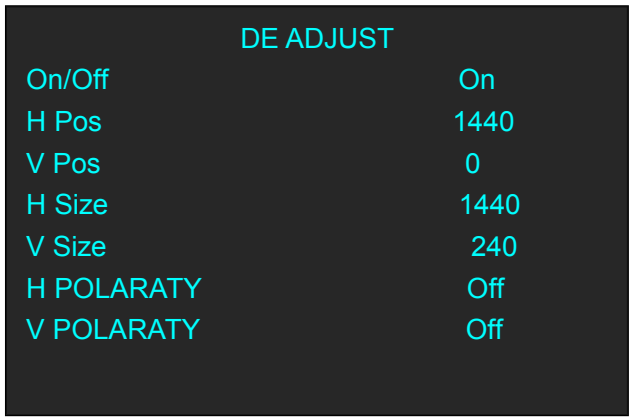


Turn the knob or touch [Output Format] to enter the menu as follows:

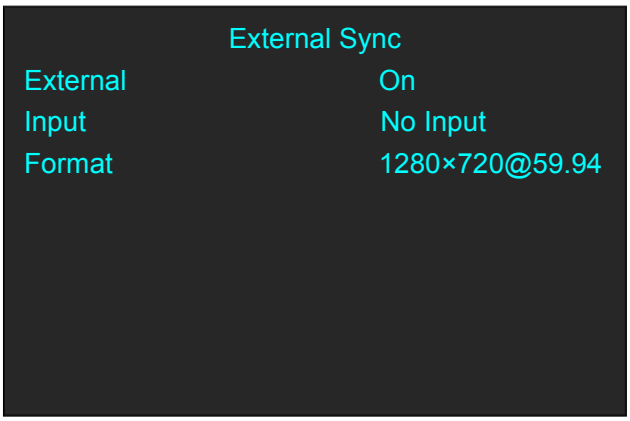


Turn the knob or touch [Output Setting] to enter the menu as follows:

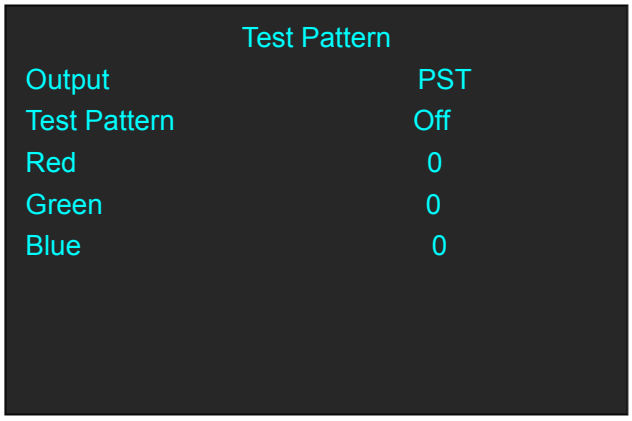




Turn the knob or touch [External Sync] to enter the menu as follows:



Turn the knob or touch [Test Pattern] to enter the menu as follows:



Output Format	**Standard** Users can select standard resolution as actual.
Output Setting	**Output Port** Select PST OR PGM. **DVI/HDMI** Select DVI or HDMI. **Bit Depth** When select DVI, the default bit depth is 8 Bits; when select HDMI, the bit depth can be 8 Bits or 10 Bits. **Color Space** Select Image or Video. **DE ADJUST** Select On or Off to enable or disable DE adjust. Set the horizontal position of output signal. Set the vertical position of output signal. Set the horizontal size of output signal.

	Set the vertical size of output signal. Enable or disable horizontal polarity. Enable or disable vertical polarity.
External Sync	**External** Select On or Off to enable or disable external sync. **Input** Show the input signal. **Format** Show the resolution of input signal.
Test Pattern	**Output** Select PST or PGM. **Test Pattern** Select Color Bar, Solid Color or disable the function. **Red** The adjustment range is from 0 to 255. **Green** The adjustment range is from 0 to 255. **Blue** The adjustment range is from 0 to 255.

3.3.3 FREEZE

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [FREEZE] option in LCD screen, push the knob or touch the 

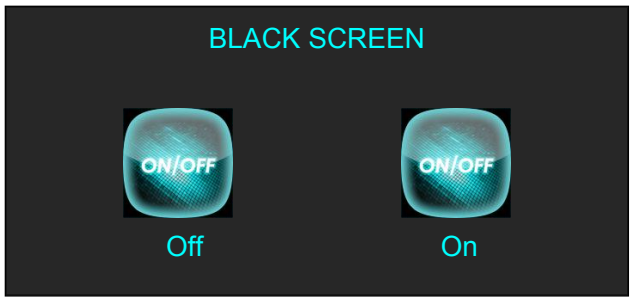
icon directly to confirm, and enter the menu as follows:

Live	When freeze the layer, users can select this icon to live.
Freeze A	Freeze layer A.
Freeze B	Freeze layer B.
Freeze All	Freeze layer A and layer B.
PGM Freeze	Select PST Freeze or PGM Freeze. Touch “ON” on LCD screen, then PGM Freeze enable; Touch “OFF”, then PST Freeze enable.

3.3.4 BLACK

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [BLACK] option in LCD screen, push the knob or touch the 

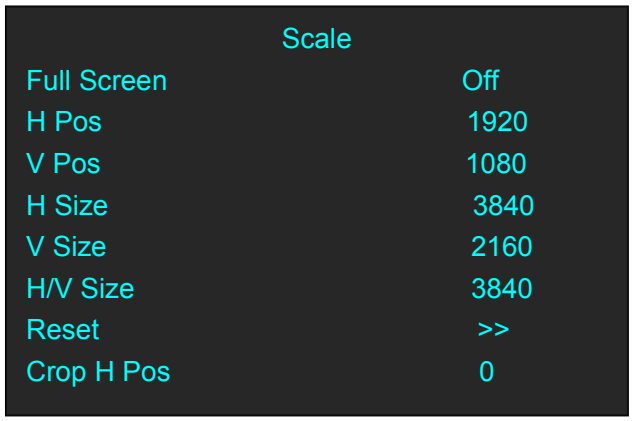
icon directly to confirm, and enter the menu as follows:

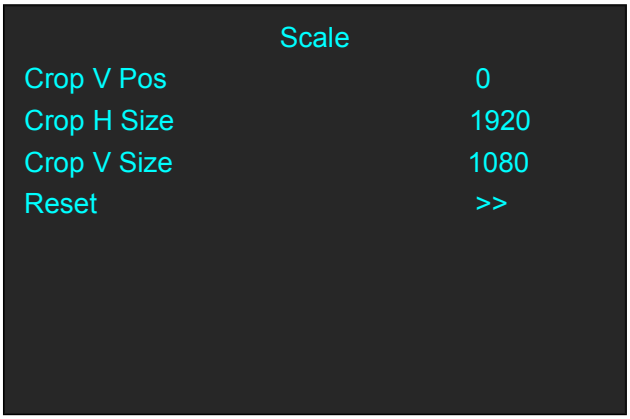


Off	Select [Off] and push the knob to confirm or touch [Off] to disable BLACK function.
On	Select [On] and push the knob to confirm or touch [On] to enable BLACK function.

3.3.5 SCALE

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [SCALE] option in LCD screen, push the knob or touch the 
icon directly to confirm, and enter the menu as follows:

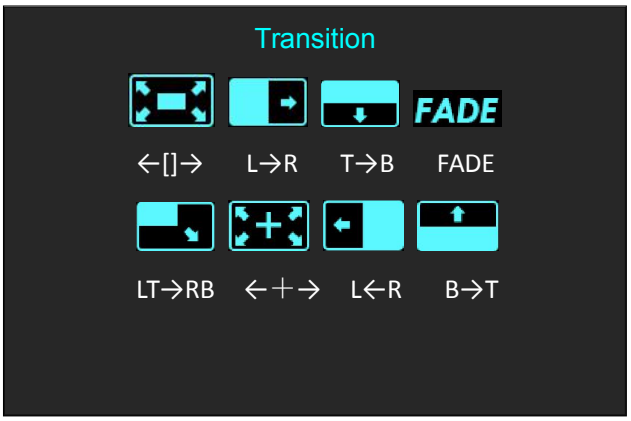


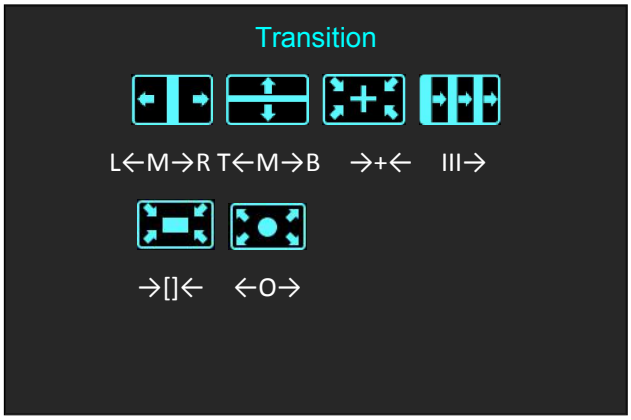


Full Screen	Select On/Off to enable or disable full screen.
H Pos	Set horizontal position.
V Pos	Set vertical position.
H Size	Set horizontal size.
V Size	Set vertical size.
H/V Size	the parameter is equal to H Size.
Reset	If improper operation occurs, it can be restored by reset.
Crop H Pos	Crop the horizontal position.
Crop V Pos	Crop the vertical position.
Crop H Size	Crop the horizontal size.
Crop V Size	Crop the vertical size.
Reset	If improper operation occurs, it can be restored by reset.

3.3.6 Transition Effect

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [Transition Effect] option in LCD screen, push the knob or touch the  icon directly to confirm, and enter the menu as follows:



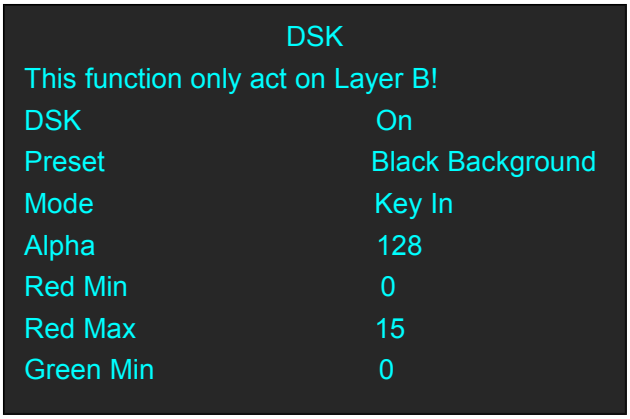


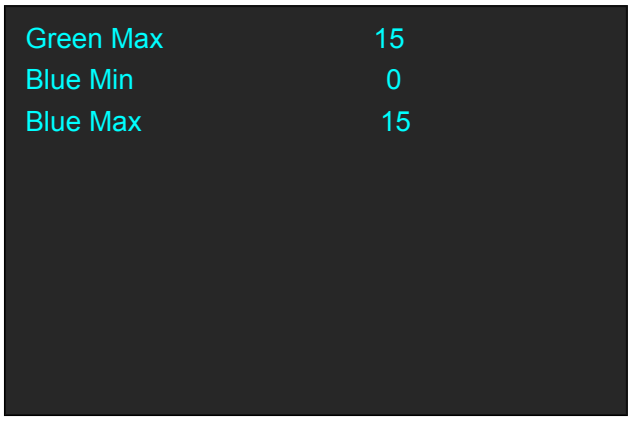
 ←[]→	Iris Box
 L→R	Wipe to Right
 T→B	Wipe to Bottom
 FADE	Fade In and Fade Out
 LT→RB	Wipe to Bottom Right
 ←+→	Iris Cross
 L←R	Wipe to Left
 B→T	Wipe to Top
 L←M→R	Center Split Horizontal
 T←M→B	Center Split Vertical
 →+←	Cross Inwards
 III→	Blinds Vertical
 →[]←	Box Inwards
 ←O→	Iris Round

3.3.7 DSK

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [DSK] (DSK function only acts on Layer B) option in LCD screen, push the knob or touch the 

icon directly to confirm, and enter the menu as follows:



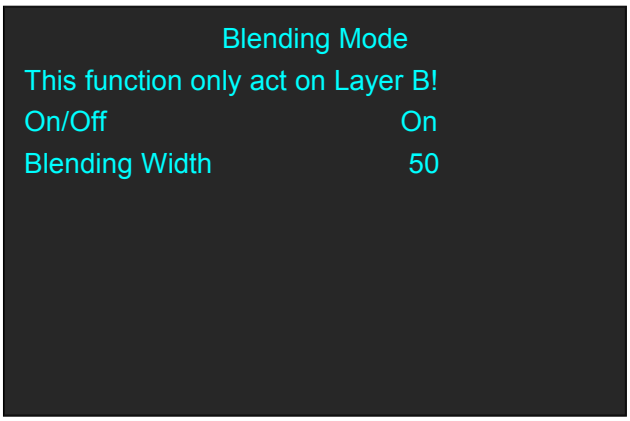


DSK	Select On/Off to enable or disable DSK.
Preset	Select background color from black, white, red, green, blue or “user” to .
Mode	Key In or Key Out can be selected.
Alpha	Set the Alpha parameter. The adjustment range is from 0 to 128.
Red Min	The adjustment range is from 0 to 255.
Red Max	The adjustment range is from 0 to 255.
Green Min	The adjustment range is from 0 to 255.
Green Max	The adjustment range is from 0 to 255.
Blue Min	The adjustment range is from 0 to 255.
Blue MAX	The adjustment range is from 0 to 255.

3.3.8 BLEND

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [BLEND] (BLEND function only acts on Layer B) option in LCD screen, push the knob or touch the 

icon directly to confirm, and enter the menu as follows:

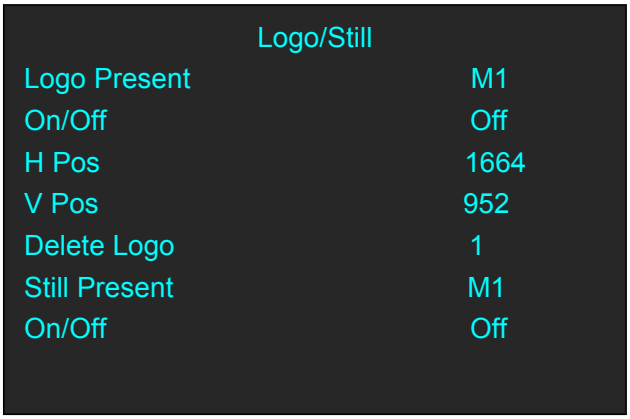


On/Off	Select On/Off to enable or disable blending mode.
Blending Width	Users can adjust blending width ranging from 0 to 90.

3.3.9 LOGO

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [LOGO] option in LCD screen, push the knob or touch the 

icon directly to confirm, and enter the menu as follows:

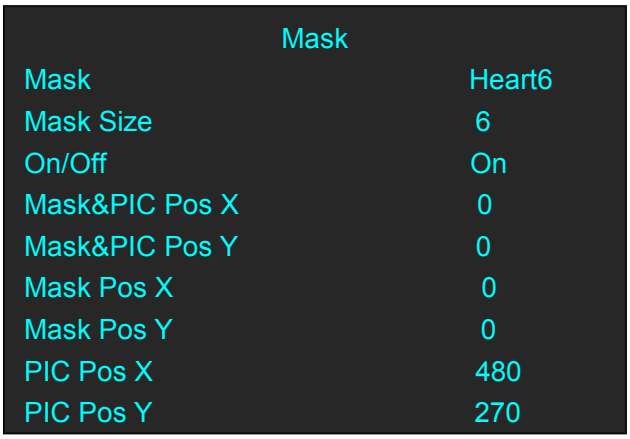


Logo Present	Select the present logo.
On/Off	Select On/Off to enable or disable Logo.
H Pos	Set the horizontal position of logo.
V Pos	Set the vertical position of logo.
Delete Logo	Users can select any saved logo to delete.
Still Present	Select the present still.
On/Off	Select On/Off to enable or disable Still.
H Pos	Set the horizontal position of still.
V Pos	Set the vertical position of still.
Delete Still	Users can select any saved still to delete.

3.3.10 MASK

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [MASK] option in LCD screen, push the knob or touch the 

icon directly to confirm, and enter the menu as follows:



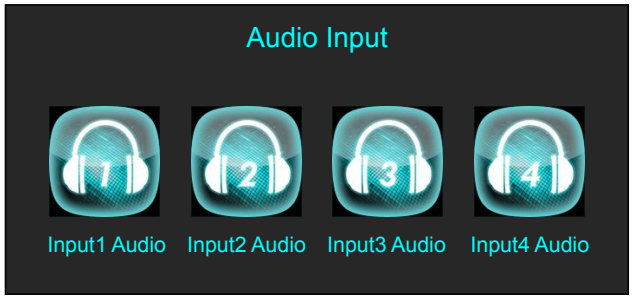
Mask	13 kinds of mode: diamond, round, heart, star, triangle, oval, hexagons, pentagon, 4 point star, 6 point star,

	lighting, crescent left and crescent right.
Mask Size	Set the mask size.
On/Off	Select On/Off to enable or disable mask.
Mask&PIC Pos X	Set the horizontal position of mask and picture.
Mask&PIC Pos Y	Set the vertical position of mask and picture.
Mask Pos X	Set the horizontal position of mask.
Mask Pos Y	Set the vertical position of mask.
PIC Pos X	Set the horizontal position of picture.
PIC Pos Y	Set the vertical position of picture.

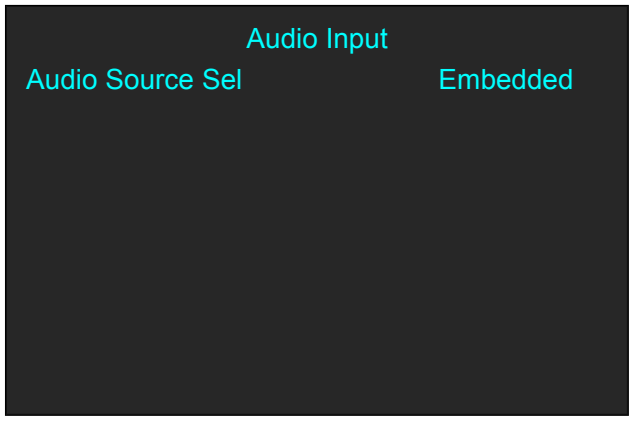
3.3.11 Audio In

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [Audio In] option in LCD screen, push the knob or touch the 

icon directly to confirm, and enter the menu as follows:



Select a input audio from Input1 Audio to Input4 Audio, and enter the menu as follows:



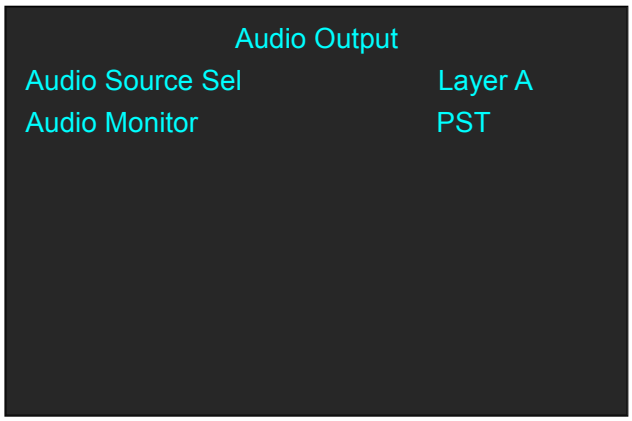
Audio Source Sel	The Audio Source Selection is embedded or External.

3.3.12 Audio Out

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [Audio Out] option

in LCD screen, push the knob or touch the 

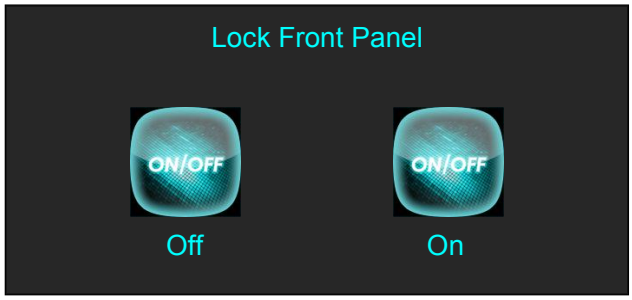
icon directly to confirm, and enter the menu as follows:



Audio Source Sel	Users can select Layer A or Layer B as audio source.
Audio Monitor	Users can select PST or PGM as andio monitor.

3.3.13 Lock Front Panel

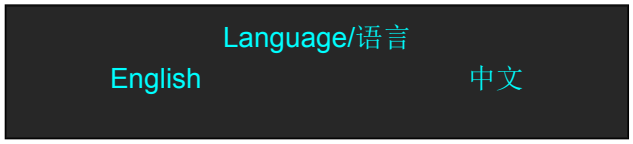
Push [MENU] button, and enter the menu items. Turn the rotary knob, select [Lock Front Panel] option in LCD screen, push the knob or touch the  icon directly to confirm, and enter the menu as follows:



Off	Select [Off] and push the knob to confirm or touch [Off] to revive the Front Panel.
On	Select [On] and push the knob to confirm or touch [On] to lock the Front Panel.

3.3.14 Language/语言

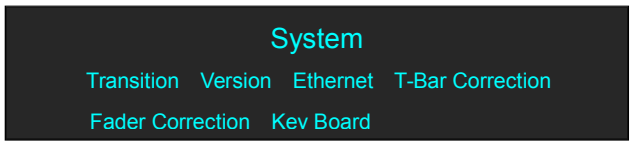
Push [MENU] button, and enter the menu items. Turn the rotary knob, select [Language/语言] option in LCD screen, push the knob or touch the  icon directly to confirm, and enter the menu as follows:



English	Select [English] and push the knob to confirm or touch [English] to choose English.
中文	Select [中文] and push the knob to confirm or touch [中文] to choose Chinese.

3.3.15 System

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [System] option in LCD screen, push the knob or touch the  icon directly to confirm, and enter the menu as follows:



Transition	**Trans Time** The adjustment range is from 1.0S to 9.9S.
Version	Show the version of COM MCU, EXT MB MCU, PGM MCU, PGM Core, KEY MCU.
Ethernet	**DHCP** Enable or disable the network function. If select [ON], user can set the IP address, subnet mask and gateway. **State** Show the present state of DHCP, IP, Subnet Mask, Gateway.
T-Bar Correction	Step 1: Press the T-BAR to the top Step 2: Choose On or Off Step 3: Press the T-BAR to the bottom Step 4: Choose On or Off T-Bar Calibration::0~1024
Fader Correction	Step 1: Push Fader 1&2 to top Step 2: Choose On or Off Step 3:Push Fader 1&2 to the bottom Step 4: Choose On or Off Fader Calibration: 0:0
Key Board	**MASK** Users can custom Self, Black or FS. PGM LOGO Users can custom Self or PGM Freeze. PST LOGO

	Users can custom Self or PST Freeze.

3.3.16 Factory Reset

Push [MENU] button, and enter the menu items. Turn the rotary knob, select [Factory Reset] option in LCD screen, push the knob or touch the  icon directly to confirm, and enter the menu as follows:

Users can select factory reset or not.

3.4 PST Mode

M1 supports 1 HDMI preview output, and it supports the functions as below:

3.4.1 Signal Selection

Push any button in Input Sources Area, for example, push the button [3], the border of signal 3 will turn to yellow, and the signal in PGM monitor will turn to signal 3.

3.4.2 Add or Delete Layer

Push any button of [A] to [B] in Layer Selection Area to add or delete the layer.
Add layer: The light is lit.
Select layer: The light is flashing.
Delete layer: The light is off.

3.4.3 Freeze the Layer

Push the [FREEZE] button in LCD screen, Select as needed to freeze layer A, layer B or 2 layers, push the button<Live> , the layer is live.

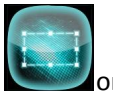
3.4.4 2 Layers Presets

(1) Push A or B button in Layer selection Area to select 1 or 2 layouts, including 1P, PIP.

(2) User can adjust the position, size for the selected layer, and set DSK, BLEND and MASK, some function coming soon.

3.4.5 Scale and Crop the Layer

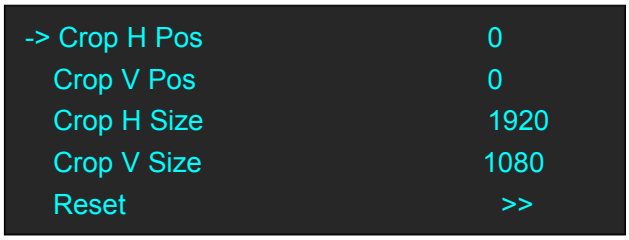
(1) Push any button of [A] to [B] in Layer Selection Area, the light is red lit when the layer is selected.

(2) Push the [SCALE] button in Layer Adjustment Area or  on the LCD screen, and enter the scale menu as follows:

Use the rotary knob to adjust the scale of the layer.
H Pos: Set horizontal position.

V Pos: Set vertical position.
H Size: Set horizontal size.
V Size: Set vertical size.
Reset: If improper operation occurs, it can be restored by reset

(3) Push the [SCALE] button in Layer Adjustment Area or  on the LCD screen, and enter the scale menu as follows:



Use the rotary knob to adjust the crop of the layer.
Crop H Pos: Crop the horizontal position.
Crop V Pos: Crop the vertical position.
Crop H Size: Crop the horizontal size.
Crop V Size: Crop the vertical size.
Reset: Reset crop if image quality i distorted by improper operation.

3.4.6 DSK Setting

(1) Firstly, enable the 2 layers function.

(2) Push [MENU] button, and enter to the menu items. Turn the rotary knob, and select <DSK> option in LCD screen, rotary the knob or touch the <DSK> to confirm.

DSK	On
Preset	Black Background
Mode	Key In
Alpha	128
Red Min	0
Red Max	15
Green Min	0

Green Max	15
Blue Min	0
Blue Max	15

DSK: Can select enable or disable the DSK function.
Preset: Users can select black background, white background, red background, green background and blue background.
Mode: Select Key In or Key Out.
Alpha: The adjustment range is between 0~128.
Red Min: The adjustment range is between 0~255.
Red max: The adjustment range is between 0~255.
Green Min: The adjustment range is between 0~255.
Green Max: The adjustment range is between 0~255.
Blue Min: The adjustment range is between 0~255.
Blue Max: The adjustment range is between 0~255.

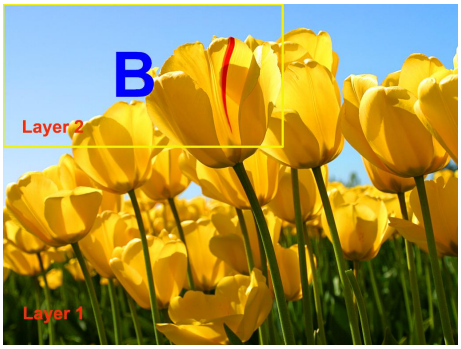
3.4.6.1 Key In and Key Out

(1) Key In

To cut out the color selected in [Preset] and other colors remain unchanged. Take Black Background and Blue Background for example, see the effect below:

(2) Key Out

The color selected in [Preset] remains unchanged and other colors are cut out. Take Black Background and Blue Background for example, see the effect below:



3.4.7 Transitions Setting

(1) Touch the transition buttons in LCD screen, M1 supports 14 kinds of wipe modes:

Touch the transition button  , user can select ←[]→.

Touch the transition button  , can select L→R.

Touch the transition button  , user can select T→B.

Touch the transition button  , can select fade.

Touch the transition button  , user can select LT→RB.

Touch the transition button  , user can select ←┼→.

Touch the transition button  , user can select L←R.

Touch the transition button  , user can select B→T.

Touch the transition button  , user can select L←M→R.

Touch the transition button  , user can select T←M→B.

Touch the transition button  , user can select →+←.

Touch the transition button  , user can select III→.

Touch the transition button  , user can select →[]←.

Touch the transition button  , user can select ←O→.

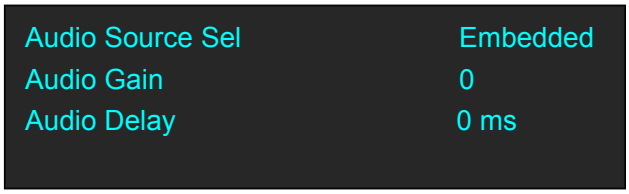
(2) Push the [TAKE] button, or use T-bar switcher to switch the image to program with selected wipe.

3.4.8 Audio In Setting

(1) Push [MENU] button, and enter the menu items. Turn the rotary knob, select <Audio In> option in LCD screen, rotary the knob or touch the 

directly to confirm.

(2) Select the Audio input 1-4 for setting:



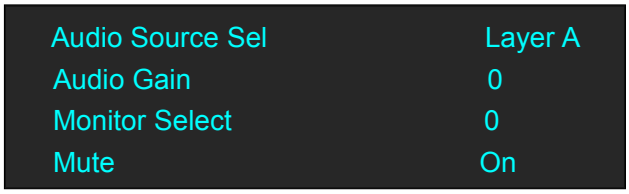
Audio Source Sel: The default is Embedded.
Audio Gain: The adjustment range is between 0~100
Audio Delay: The adjustment range is between 0~20ms

3.4.9 Audio Out Setting

(1) Push [MENU] button, and enter the menu items. Turn the rotary knob, select <Audio Out> option in LCD screen, rotary the knob or touch the 

icon directly to confirm.

(2) Select the Audio Output for setting:



Audio Source Sel: Select Layer A or Layer B
Audio Gain: The adjustment range is between 0~100
Monitor Select: Select PST or PGM
Mute: Select On or Off

3.4.10 BLEND Setting

Push [MENU] button, and enter the menu items. Turn the rotary knob, select <BLEND> option in LCD screen, rotary the knob or touch the 

icon directly to confirm.

Layer Select	Layer A
Blending Mode	3D Frame
Blending Width	0
On/off	On

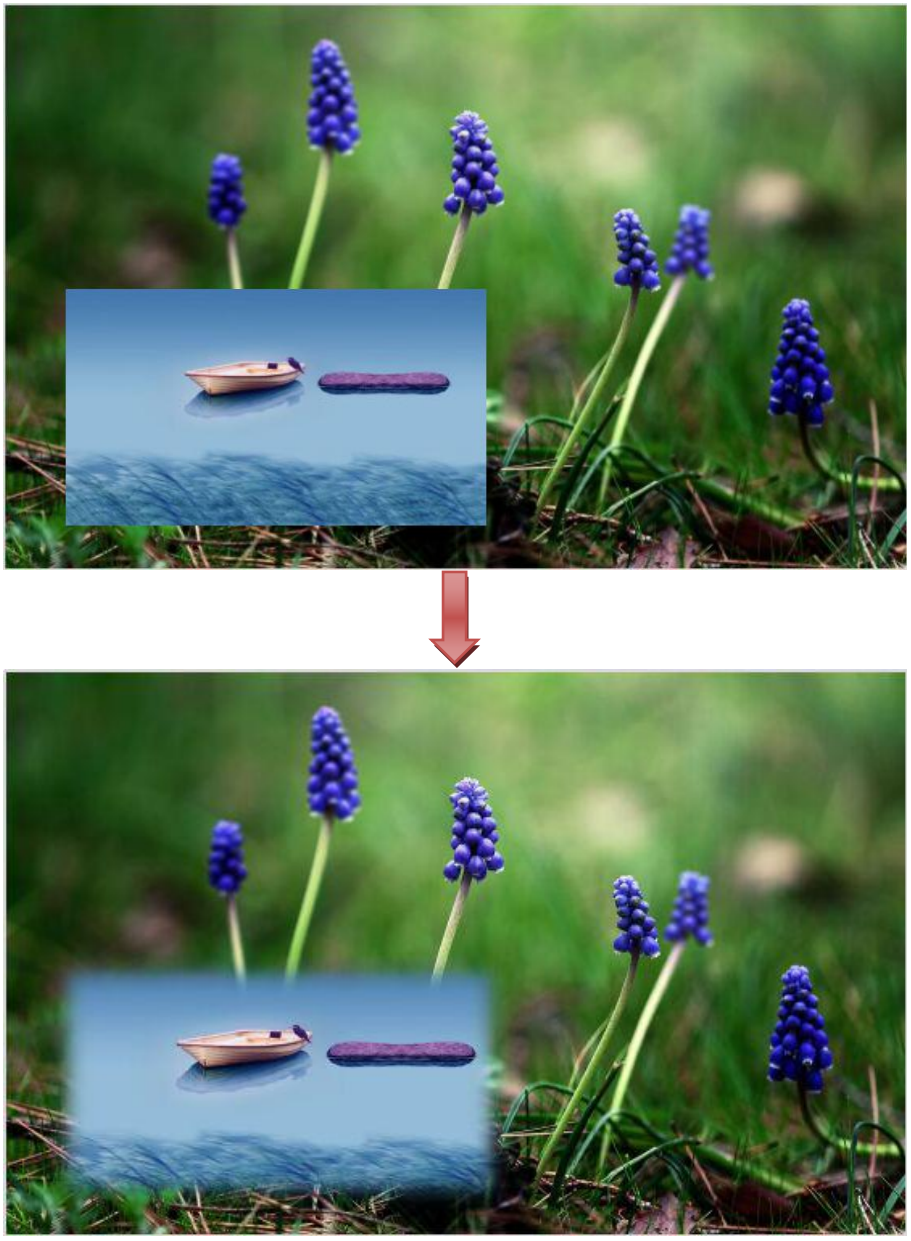
Layer Select: Select Layer A or Layer B

Blending Mode: Including 3D Frame, Pure Color Frame, Outside, Inline 4 modes

Blending Width: The adjustment range is between 1~90

On/Off: Select On or Off

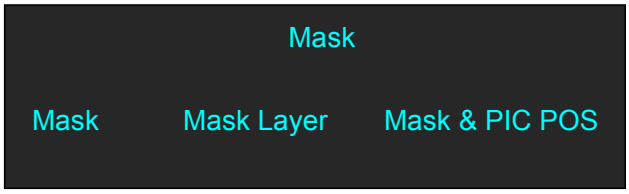
For example, set the Blending Width as 50, see the effect below:



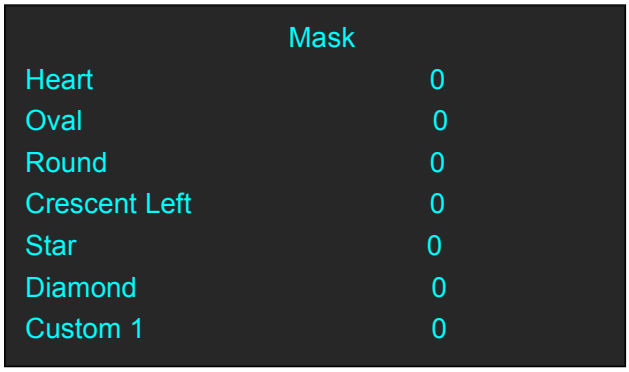
3.4.11 Mask Setting

(1) Push [MENU] button, and enter the menu items. Turn the rotary knob, select <Mask> option on LCD screen, rotary the knob or touch the 

directly to confirm.

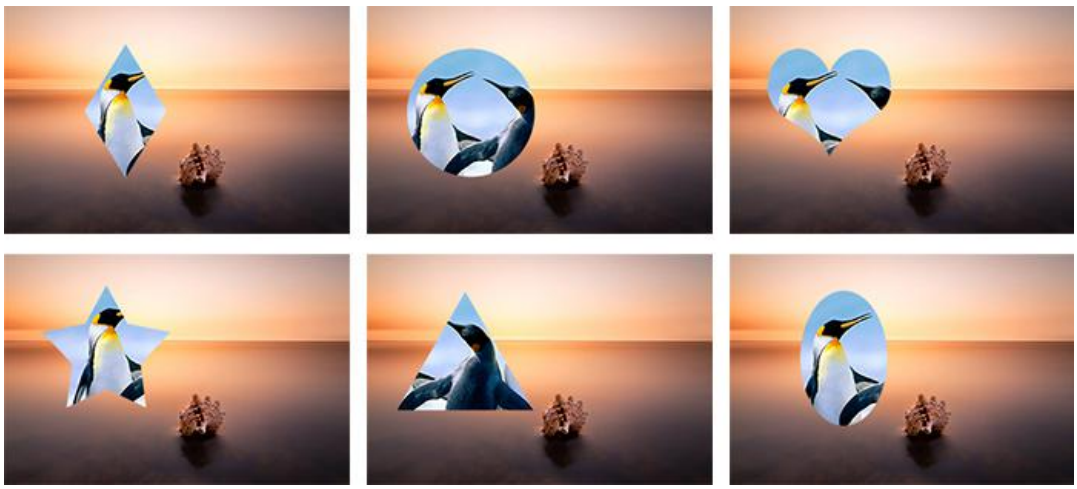


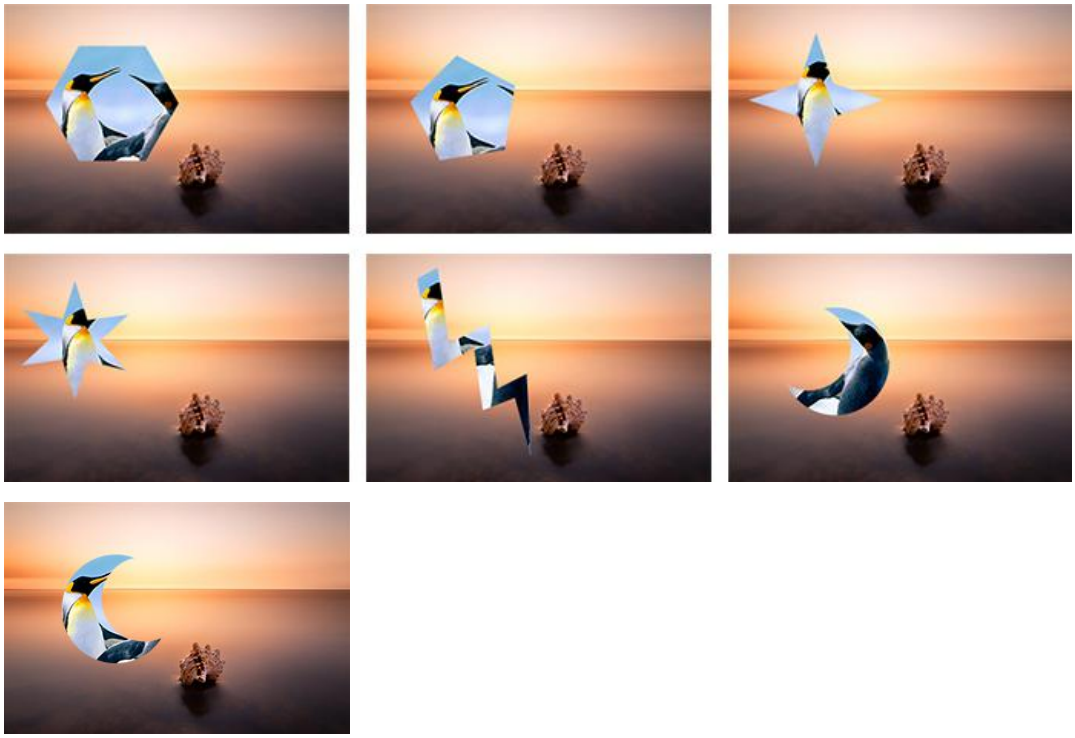
(2) Select the Mask for setting :



Customs: Coming soon

Turn the rotary knob, and select <Mask>, Press the knob to confirm. Turn the rotary knob, and select the effects. There are 13 masks: diamond, round, heart, star, triangle, oval, hexagons, pentagon, 4 point star, 6 point star, lighting, crescent left and crescent right.
User can also Press the layer mask selection button in Layer Mask Area to select a mask.
The 13 masks are as follows:





3.5 PGM Mode

1. Switch the edited PST image to program by pushing the [CUT], [TAKE] button or T-bar, and then the PGM image will return to PST state, which can be edited.
2. There are 1 HDMI output and 1SDI output for program, and up to support 1920x1080 output resolution.

3.6 Switching Mode

1. T-BAR switch: Switch the PST image to program with wipe and fade by T-bar.
2. CUT switch: Seamless switch the PST image to program by pushing [CUT] button.
3. TAKE switch: Switch the PST image to program with wipe and fade by pushing [TAKE] button.
4. CUE switch: EARPHONE voice via CUE transfer PST to PGM.
5. MUTE switch: MUTE only for PGM voice.

3.7 Set the Output Parameter

Select the Output Resolution

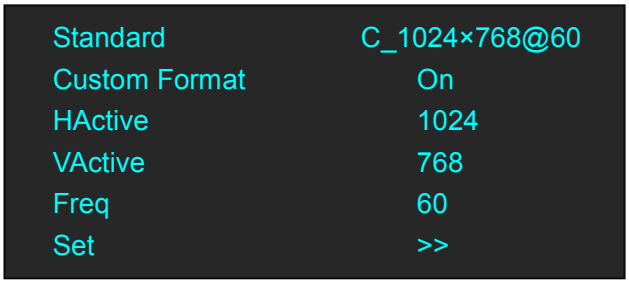
Push the [MENU] button, and enter the menu items, turn the rotary knob and select <Output> or  :

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

<Output Format> is the default option, push the rotary to confirm. Turn the rotary knob, select the output resolution according to actual need.

Customs Output Resolution

Continue the above operation, setting the HActive, VActive, Freq, and select <Set>, confirm the Set setting to Yes.Then the LCD screen shown as below:



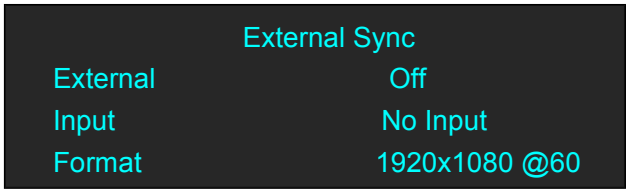
Output Setting

Push the rotary knob or touch the button <Output setting> to confirm, and enter the menus as below:

DVI or HDMI output format can be chosen for PST and PGM output port, SDI Level choose Level A or Level B.

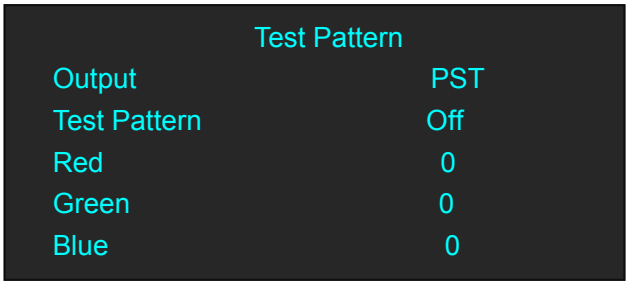
External Sync

External Including option Off and On, Input will shown as actual input resolution.



Format support choose 2 default resolution: 1280x720 @60 & 1920x1080 @60.

Test Pattern



Output: Select PST or PGM

Test Pattern: Select Off, Color Bar, Solid Color

Red: The adjustment range is between 0~255

Green: The adjustment range is between 0~255

Blue: The adjustment range is between 0~255

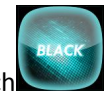
3.8 Using Black Out

Black out description:

Black signal realizes one-key-touch to a black screen.

M1 provides black effect processing for program output and preview output, with cut black effect.

Operation is as below:

Touch the [BLACK] button or touch 

key and then touch “On”, then the program output is cut to black.

The effect is shown as below:

3.9 Saving Views

M1 provides 20 positions for saving or recording parameters. To save current parameters and settings:

(1) Push the [SAVE] button in Presets operation area, the button [SAVE] and [PAGE] lights are lit,and some of buttons 1~5 are lit and some are flashing. The button lit can be saved and flash will be overwrite, push the button lit to save.

(2) Select PAGE, for example, the button [2] is lit, push the button [2].

(3) After set the PAGE, it will jump to BANK option, or example, the button [2] is lit, push the button [2]:

(4) Push the [SAVE] button again, the button light is off, and exit the save function.

3.10 Recall Saved Settings

M1 provides 20 positions for saving or recording parameters. To recall saved settings:

(1) Push the [LOAD] button in Presets operation area, the button [LOAD] and [PAGE] lights are lit, and some of buttons 1~5 are lit and some are flashing. The button lit is ready for recall and flash means just recall, push the button lit to recall.

(2) Select PAGE, for example, the button [2] is lit, push the button [2].

(3) After set the PAGE, it will jump to BANK option, or example, the button [2] is lit, push the button [2]:

(4) Push the [LOAD] button again, the button light is off, and exit the load function.

Chapter 4 Remote Control Setting

There are two ways to come true remote control for M1. One is by COM Ports, another is by Network.

4.1 COM Port Connecting

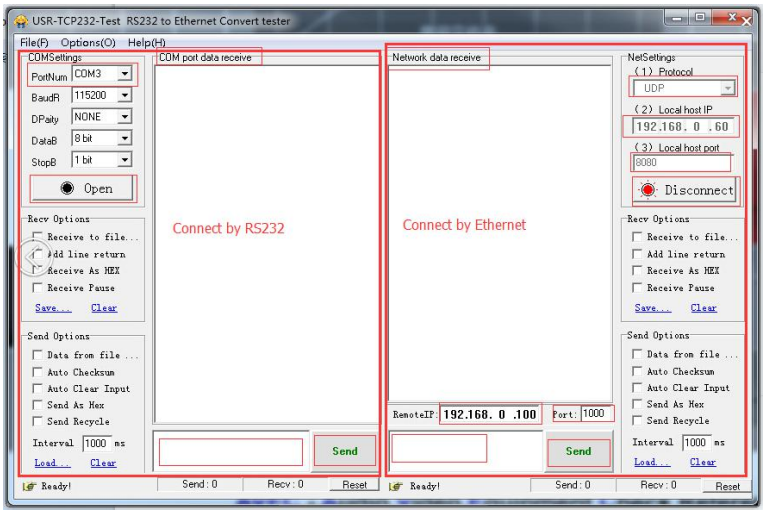
(1) Connecting the computer USB B port with USB A port of M1.

(2) Get the computer COM ports number by following ways:

Computer/attribute/setting administrate/communication port: COM1.

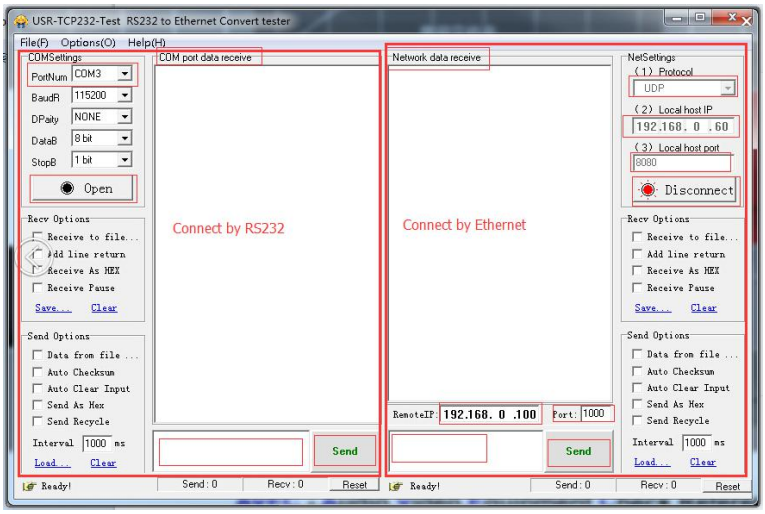
(3) Open the “RS 232 to Ethernet Convert Tester”.

Setting as left window “connect by RS232”:Select “PortNum” as actual, click “Open”, then stick the protocol order to left dialog box of “Send”, then click “Send” , once “Com port Data Receive” shown the receive data, the remote control is been setting succeed.



4.2 Network Connecting

(1) Setting as right windows as follows:



<Remote IP >and <Local Host IP> setting the same network segment: e.g.192.168.0

<Protocol> select “UDP”

Remote< port>: default “1000”, <Local host port>: default “8082”

(2) Click “Open”, stick the protocol order to left dialog box of “Send”, then click “Send”, Once “Network Data Receive ”shown the receive data, the remote control is been setting succeed.

Chapter 5 Ordering Codes

5.1 Product

220-0001-01-0	M1

5.2 Options

5.2.1 Input Options

190-0001-04-2	Single DVI Input(CVBS,VGA,YPbPr with adapter)
190-0001-07-2	Single 3G-SDI In/Loop Out
190-0001-10-2	Single USB2.0 In/Backup
190-0001-13-2	Single HDMI Input

5.2.2 Output Options

290-0001-01-0	SDI/HDMI PGM&PVW Output module
290-0001-04-0	HDMI Output

Chapter 6 Contact Us

6.1 Contact Us

Contact Us

Web
www.rgblink.com

Phone
+86-592-577-1197

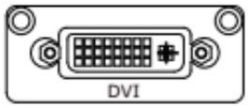
Email
Sales sales@rgblink.com
Support support@rgblink.com

Social Media

@RGBLINK /rgblink +rgblink /rgblink rgblink rgblink

Chapter 7 Appendix

7.1 Specification

DVI Input (DVI optional module)	
Interface Appearance	
Connector	Standard DVI-I socket (Supported DVI, VGA, YPbPr, CVBS 4 in 1)
Supported Resolution	DVI Resolution: SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC, 1080P50/59.94/60, 1080i50/59.94/60, 720P50/59.94/60 VESA: 800×600@60Hz | 1024×768@60Hz | 1280×1024@60Hz | 1600×1200@60Hz | 1920×1080@60Hz | 1920×1200@60Hz | 2048×1152@60Hz
	VGA Resolution： VGA-UXGA (800×600@60 | 1024×768@60 | 1280×1024@60 | 1440×900@60 | 1600×1200@60 | 1920×1080@60)
	YPbPr Resolution: 800×600@60 | 1024×768@60 | 1280×1024@60 | 1440×900@60 | 1600×1200@60 | 1920×1080@60
	CVBS Resolution: 480i | 576i
Signal Level	DVI: TMDS pwl, single pixel input,165MHz bandwidth
	VGA: R, G, B, Hsync, Vsync: 0 to1Vpp±3dB (0.7V Video+0.3v Sync) 75 ohm black level: 300mV Sync-tip: 0V
	YPbPr: R, G, B, Hsync, Vsync: 0 to1Vpp±3dB (0.7V Video+0.3v Sync) 75 ohm black level: 300mV Sync-tip: 0V
	CVBS: 1Vpp±3db (0.7V Video+0.3v Sync) 75 ohm
Format Standard	DVI: DVI 1.0 /HDMI 1.3
USB Input (USB optional module)	
Interface Appearance	
Board Size	52(L)×19.5(W) (mm)
Connector	Standard USB port: USB-A
Supported Standard	Support general Image and video formats

3G-SDI Input (SDI optional module)	
Interface Appearance	
Board Size	52(L)×19.5(W) (mm)
3G-SDI Input	
Connector	Standard BNC Socket
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
Supported Resolution	SMPTE 425M (3G Level A) 4:2:2: 1920×1080@60Hz (1:1) | 1920×1080@50Hz (1:1). SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080@60Hz (2:1) | 1920×1080@50Hz (2:1) SMPTE 296M (HD): 1280×720@50Hz (1:1) | 1280×720@50Hz (1:1) SMPTE 125M (SD): 1440×487@60Hz (2:1) | 525-line 487 generic SMPTE ITU-R BT.656 (SD): 1440×576@50Hz (2:1), 625-line generic.
Balance	Belden 1694A cable: 150m at 2.97Gb/s 250m at 1.485Gb/s 480m at 270Mb/s
SDI Loop Out	
Connector	Standard BNC Socket
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
Supported Resolution	SMPTE 425M (3G Level A) 4:2:2: 1920×1080@60 (1:1) | 1920×1080@50 (1:1). SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080@60 (2:1) | 1920×1080@50 (2:1) SMPTE 296M (HD): 1280×720@50 (1:1) | 1280×720@50 (1:1) SMPTE 125M (SD): 1440×487@60 (2:1), 525-line 487 generic SMPTE ITU-R BT.656 (SD): 1440×576@50 (2:1), 625-line generic.
Balance	Belden 1694A cable: 150m at 2.97Gb/s 250m at 1.485Gb/s 480m at 270Mb/s
HDMI Input (HDMI optional module)	
Interface Appearance	
Board Size	52(L)×19.5(W) (mm)

HDMI Input	
Connector	Standard HDMI-A socket
Supported Resolution	SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC, 1080P50/59.94/60 | 1080i50/59.94/60, 720p50/59.94/60 VESA: 800×600@60 | 1024×768@60 | 1280×720@60 | 1280×800@60 | 1280×960@60 | 1280×1024@60 | 1400×1050@60 | 1600×1200@60 | 1920×1080@60 | 1920×1200@60
Signal Level	TMDS pwl, single pixel input, 165MHz bandwidth
Format Standard	HDMI 1.3
HDMI Loop Out	
Connector	HDMI standard type A interface
Supported Resolution	SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC, 1080P50/59.94/60 | 1080i50/59.94/60, 720p50/59.94/60 VESA: 800×600@60 | 1024×768@60 | 1280×720@60 | 1280×800@60 | 1280×960@60 | 1280×1024@60 | 1400×1050@60 | 1600×1200@60 | 1920×1080@60 | 1920×1200@60
Format Standard	HDMI 1.3
HDMI PGM Output	
Connector	HDMI standard type A interface
Number of Inputs	1
Supported Resolution	SMPTE: 625/25/50 PAL, 525/29.97/59.94 NTSC, 720p50/59.94/60 | 1080i50/59.94/60 | 1080P50/59.94/60 VESA: 800×600@60Hz | 1024×768@60/75/85Hz | 1152x864@75Hz | 1280x720@50/59.94/60Hz | 1280×768@60Hz | 1280x800@60Hz | 1280x960@60/85Hz | 1280×1024@60/75/85Hz | 1366x768@20/60Hz | 1440x900@60Hz | 1400x1050@60Hz | 1600×1200@60Hz | 1920×1080@40/50/59.94/60Hz | 1920×1080@50i/59.94i/60i
Format Standard	HDMI 1.3
SDI PGM Output	
Connector	Standard BNC Socket
Number of Inputs	1
Data Rate	2.97Gb/s, 2.97/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s and 270Mb/s
Supported Resolution	SMPTE 425M (3G Level A) 4:2:2: 1920×1080@60Hz (1:1) | 1920×1080@50Hz (1:1). SMPTE 425M (3G Level B DS1 and DS2) 4:2:2: 1920×1080@60Hz (2:1) | 1920×1080@50Hz (2:1) SMPTE 296M (HD): 1280×720@50Hz (1:1) | 1280×720@50Hz (1:1) SMPTE 125M (SD): 1440×487@60Hz (2:1) | 525-line 487 generic SMPTE ITU-R BT.656 (SD): 1440×576@50Hz (2:1), 625-line generic.

Supported Standard	SMPTE 425M - 3G Level A and Level B
Balance	Belden 1694A cable: 150m at 2.97Gb/s 250m at 1.485Gb/s 480m at 270Mb/s
HDMI PVW Output	
Connector	24+5 pin|DVI-I
Number of Inputs	1
Supported Resolution	720p60
Format Standard	HDMI 1.3
Genlock Interface	
Connector	BNC
Number of Inputs	1
Supported Resolution	480I,576I,1080I/59.94,1080i/50,720p/59.94,720p/50,1080P50/1080P59,94/1080P60,1080psf/23.98,1080psf/24
Audio Codes	
SNR	114db
ADC/DAC Resolution	24 bits
Connector	RCA,3.5mm PHONE
Conversion Efficiency	216ksps
Extras	
Power Supply	AC 85-264V 50/60Hz
Working Environment	-25° C - 55° C
Stored Environment	10 - 90% RH
Product Warranty	3 years parts and labor warranty

7.2 Terms & Definitions

The following terms and definitions are used throughout this guide.

- **“ASCII”:** American Standard for Information Interchange. The standard code consisting of 7-bit coded characters (8 bits including parity check) used to exchange information between data processing systems, data communication systems, and associated equipment. The ASCII set contains control characters and graphic characters.
- **“Aspect ratio”:** The relationship of the horizontal dimension to the vertical dimension of an image. In viewing screens, standard TV is 4:3, or 1.33:1; HDTV is 16:9, or 1.78:1. Sometimes the “:1” is implicit, making TV = 1.33 and HDTV = 1.78.
- **“AV”:** Audio visual, or audio video.
- A **“Background”** is an unscaled source, typically originating from a computer. A background source appears at the system’s lowest priority — visually in back of all other sources.
- **“Baudrate”:** Named of J.M.E. Baudot, the inventor of the Baudot telegraph code. The number of the electrical oscillations per second, called baud rate. Related to, but not the same as, transfer rate in bits per second (bps).
- **“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. One signal is normally used to set up an entire video system or facility. Sometimes it is called House sync.
- **“BNC”:** Bayonet Neill-Concelman. A cable connector used extensively in television and named for its inventors. A cylindrical bayonet connector that operates with a twist-locking motion. To make the connection, align the two curved grooves in the collar of the male connector with the two projections on the outside of the female collar, push, and twist. This allows the connector to lock into place without tools.
- **“Brightness”:** Usually refers to the amount or intensity of video light produced on a screen without regard to color. Sometimes called “black level.
- “**CAT 5**”**:** Category 5. Describes the network cabling standard that consists of four unshielded twisted pairs of copper wire terminated by RJ-45 connectors. CAT 5 cabling supports data rates up to 100 Mbps. CAT 5 is based on the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard.
- **“Color bars”:** A standard test pattern of several basic colors (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly used color bars are the SMPTE standard color bars. In PAL video, the most commonly used color bars are eight full field bars. In the computer, the most commonly used color bars are two rows of reversed color bars.
- **“Color burst”:** In color TV systems, a burst of subcarrier frequency located on the back porch of the composite video signal. This serves as a color synchronizing signal to establish a frequency and phase reference for the chroma signal. Color burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.
- **“Color temperature”:** The color quality, expressed in degrees Kelvin(K), of a light source. The higher the color temperature, the bluer the light. The lower the temperature, the redder the light. Benchmark color temperature for the A/V industry include 5000°K, 6500°K,

and 9000°K.

- **“Contrast ratio”:** The radio of the high light output level divided by the low light output level. In theory, the contrast radio of the television system should be at least 100:1, if not 300:1. In reality, there are several limitations. In the CRT, light from adjacent elements contaminate the area of each element. Room ambient light will contaminate the light emitted from the CRT. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.
- **“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.
- **“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 optimal video format for the display based on the provided EDID data, ensuring proper video image quality. This communication takes place over the DDC – Display Data Channel.
- **“Ethernet”:** A Local Area Network (LAN) standard officially known as IEEE 802.3. Ethernet and other LAN technologies are used for interconnecting computers, printers, workstations, terminals, servers, etc. within the same building or campus. Ethernet operates over twisted pair and over coaxial cable at speeds starting at 10Mbps. For LAN interconnectivity, Ethernet is physical link and data link protocol reflecting the two lowest layers of the OSI Reference Model.
- **“Frame”:** In interlaced video, a frame is one complete picture. A video frame is made up of two fields, or two sets of interlaced lines. In a film, a frame is one still picture of a series that makes up a motion picture.
- **“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.
- **“HDMI” - High – Definition Multimedia Interface:** An interface used primarily in consumer electronics for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable. HDMI is the de facto standard for HDTV displays, Blu-ray Disc players, and other HDTV electronics. Introduced in 2003, the HDMI specification has gone through several revisions.
- **“HDSDI”:** The high-definition version of SDI specified in SMPTE-292M. This signal standard transmits audio and video with 10 bit depth and 4:2:2 color quantization over a single coaxial cable with a data rate of 1.485 Gbit/second. Multiple video resolutions exists including progressive 1280x720 and interlaced 1920x1080 resolution. Up to 32 audio signals are carried in the ancillary data.
- **“JPEG” (Joint photographic Expects Group):** Commonly used method of lossy compression for photographic images using a discreet cosine transfer function. The degree of compression can be adjusted, allowing a selectable tradeoff between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality. Produces blocking artifacts.
- **“MPEG”:** Motion Picture Expect Group. A standard committee under the auspices of the International Standards Organization working on algorithm standards that allow digital

compression, storage and transmission of moving image information such as motion video, CD-quality audio, and control data at CD-ROM bandwidth. The MPEG algorithm provides inter-frame compression of video images and can have an effective compression rate of 100:1 to 200:1.

- **"NTSC":** The color video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. A color signal must be compatible with black-and-white TV sets. NTSC utilizes an interlaced video signals, 525 lines of resolution with a refresh rate of 60 fields per second (60 Hz). Each frame is comprised of two fields of 262.5 lines each, running at an effective rate of 30 frames per second.
- **"Operator":** Refers to the person who uses the system.
- **"PAL":** Phase Alternate Line. A television standard in which the phase of the color carrier is alternated from line to line. It takes four full pictures (8 fields) for the color-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, in many transmission forms, is widely used in Western Europe, Australia, Africa, the Middle East, and Micronesia. PAL uses 625-line, 50-filed (25 fps) composite color transmission system.
- **"PIP":** Picture-in-Picture. A small picture within a larger picture created by scaling down one of the images to make it smaller. Each picture requires a separate video source such as a camera, VCR, or computer. 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.
- **"Polarity":** The positive and negative orientation of a signal. Polarity usually refers to the direction or a level with respect to a reference (e.g. positive sync polarity means that sync occurs when the signal is going in the positive direction).
- **"RJ-45":** Registered Jack-45. A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.
- "**RS-232":** An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either DB-9 or DB-25 connectors. This standard is used for relatively short-range communication and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length, and type of connector to be used. The standard specifies component connection standards with regard to the computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard.
- **"Saturation":** Chroma, chroma gain. The intensity of the color, or the extent to which a given color in any image is free from white. The less white in a color, the truer the color or the greater its saturation. On a display device, the color control adjusts the saturation. Not to be confused with the brightness, saturation is the amount of pigment in a color, and not the intensity. Low saturation is like adding white to the color. For example, a low-saturated red looks pink.
- **"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.

- **“SDI”:** Serial Digital Interface. The standard based on a 270 Mbps transfer rate. This is a 10-bit, scrambled, polarity independent interface with common scrambling for both component ITU-R 601 and composite digital video and four channels of (embedded) digital audio.
- **“Seamless Switching”:** A feature found on many video switchers. This feature causes the switcher to wait until the vertical interval to switch. This avoid a glitch (temporary scrambling) which normally is seen when switching between sources.
- **“SMPTE”:** Society of Motion Picture 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.
- **“S-Video”:** A composite video signal separated into the luma (“Y” is for luma, or black and white information; brightness) and the chroma (“C” is an abbreviation for chroma, or color information).
- **“Sync”:** Synchronization. In video, sync is a means of controlling the timing of an event with respect to other events. This is accomplished with timing pulses to insure that each step in a process occurs at the correct time. For example, horizontal sync determines exactly when to begin each horizontal scan line. Vertical sync determines when the image is to be refreshed to start a new field or frame. There are many other types of sync in video system.(Also known as “sync signal” or “sync pulse.”)
- **“TCP/IP”:** Transmission Control Protocol/Internet Protocol. The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.
- **“USB”:** Universal Serial Bus. USB was developed by seven PC and telecom industry leaders (Compaq, DEC, IBM, Intel, Microsoft, NEC, and Northern Telecom). The goal was easy plug-and-play expansion outside the box, requiring no additional circuit cards. Up to 127 external computer devices may be added through a USB hub, which may be conveniently located in a keyboard or monitor. USB devices can be attached or detached without removing computer power. The number of devices being designed for USB continues to grow, from keyboards, mice, and printers to scanners, digital cameras, and ZIP drives.
- **“VESA”:** Video Electronics Standards Association. A nonprofit number organization dedicated to facilitating and promoting personal computer graphics through improved standards for the benefit of the end-user. www.vesa.org
- **“VGA”:** Video Graphics Array. Introduced by IBM in 1987, VGA is an analog signal with TTL level separate horizontal and vertical sync. The video outputs to a 15-pin HD connector and has a horizontal scan frequency of 31.5 kHz and vertical frequency of 70 Hz (Mode 1, 2) and 60 Hz (Mode 3). The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using the 8514/A card (35.5 kHz, 86 Hz) in mode 4. It has a pixel by line resolution of 640×480 with a color palette of 16 bits and 256,000 colors.
- **“YCrCb”:** Used to describe the color space for interlaced component video.
- **“YPbPr”:** Used to describe the color space for progressive-scan (non-interlaced) component video.

7.3 Revision History

The table below lists the changes to the M1 User Manual.

Format	Time	ECO#	Description	Principal
V1.0	2018-07-09	0000#	Release	Lydia