BM120-4KS

12.5" 4K Portable Suitcase Monitor

User Guide

LILLIPUT®

Important Safety Instructions

The device has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment, the device should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Please do not place the display screen towards the ground to avoid scratching the LCD surface.

- Please avoid heavy impact.

- Please do not use chemical solutions to clean this product. Simply wipe with a soft cloth to keep clean of the surface.

- Please do not place on uneven surfaces.

- Please do not store the monitor with sharp, metallic objects.

- Please follow the instructions and trouble-shooting to adjust the product.

- Internal adjustments or repairs must be performed by a qualified technician.

- Please keep user guide for future reference.

- Please unplug the power and remove the battery if long-term no-use, or thunder weather.

Safety Disposal For Old Electronic Equipment

Please do not regard the old electronic equipment as municipal waste and do not incinerate old electronic equipment. Instead please always follow local regulations and hand it over to the applicable collection stand for safe recycling. Ensure that these waste materials can be effectively disposed of and recycled to prevent our environment and families from negative effects.

Introduction

BM120-4KS is a precision broadcast monitor designed for the film and video shooting on any type of camera. Providing the superior picture quality, as well as a variety of professional assist functions, including 3D-Lut, HDR, Level Meter, Histogram, Peaking, Exposure, False Color, etc. It can help the photographer analyzing every detail of the picture and final capture the best side.

Features

➢ Support multiple signal inputs 3G-SDI, HDMI, DVI and VGA.

➢ Multiple View Display supports quad view split from different input singles simultaneously.

➢ Ultra HD 4K screens containing 8.3 million pixel (3840×2160), so the resolution is four times that of Full HD.

➢ 3D LUT for Accurate Color Reproduction and Color space display

  (Native/Rec.709/User1~User3).

➢ Support to upload 3D LUT table via USB port.

➢ Equip HDR function.

➢ Image flip offers great convenience for user's user to place the monitor with various mounting methods under different conditions. Users can view the monitor normally no matter what mounting angles.

➢ Perfect size for both suitcase and rack mount.
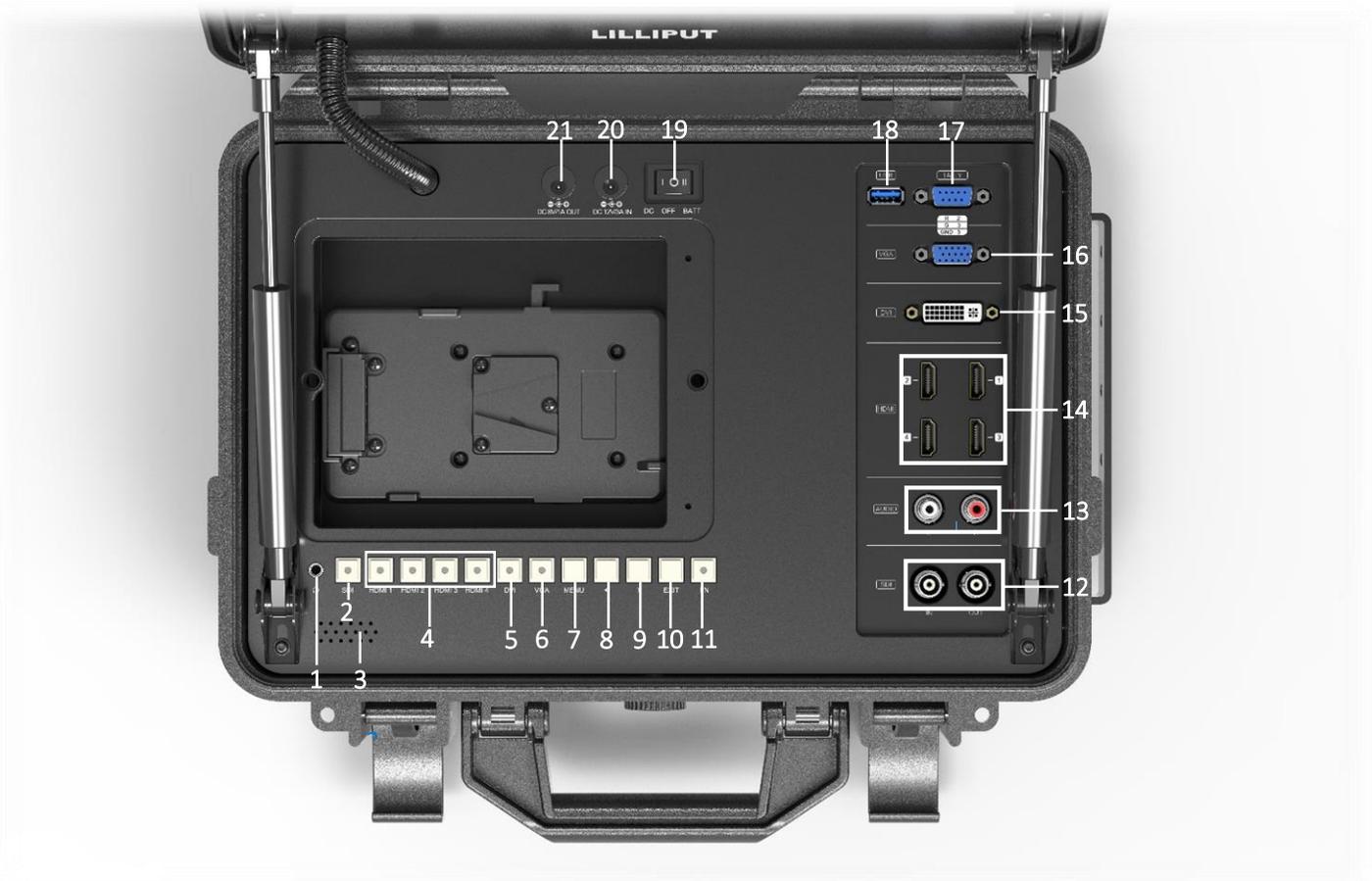
➢ WHDI wireless module for optional

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1. Product Description

1-1. Front Panel

1.2 Rear Panel

1-2-1. Interfaces

1. Earphone jack: 3.5mm earphone slot.

2. SDI button: Signal switch to SDI mode when light on.

3. Speaker

4. HDMI 1 ~ 4 buttons: Signal switch to HDMI mode when light on.

5. DVI button: Signal switch to DVI mode when light on.

6. VGA button: Signal switch to VGA mode when light on.

7. MENU button

Press to enter menu.

Press to enter option in the menu.

8. ◄ Left selection key

Select option in the menu. **Decrease** the option value.

Before enter the menu, single press to activate volume, press again to decrease the volume.

9. ► Right selection key

Select option in the menu. **Increase** the option value.

10. **EXIT button:** To return or exit the menu function.

11. **FN:** User definable shortcut button.

Default: [Peaking]

12. **SDI input/output ports**

13. **Audio L/R**

14. **HDMI input port ×4**

HDMI 1 & HDMI 2: HDMI2.0, support 4K 60Hz

HDMI 3 & HDMI 4: HDMI1.4, support to 4K 30Hz

Note ❗ **Only** HDMI 1 support HDR

15. **DVI input port**

16. **VGA input port**

17. **TALLY port**

18. **USB port**

19. **Power switch**

20. **DC 12V/3A input**

21. **DC 8V/1A output**

2. Sun Shade Installation

As shown below after finished.

3. MENU Settings

Please check whether the device is connected well or not.

3-1. FN user definable shortcut buttons

Long keep pressing FN buttons for 3-5 seconds to activate shortcut menu setting. Option selected will be highlighted as white. option will be highlighted as yellow, unavailable option will be highlighted as gray. Select option via " ◀ / ▶ " buttons. Then press "MENU" button to confirm to set as default option.

Shortcut functions can be customized to meet user's needs as following:

NO	Shortcut Menu when long press FN shortcut button
1	Center Marker
2	Safety Marker
3	Aspect Marker
4	Aspect
5	Underscan
6	Check Field
7	Freeze
8	Pixel to Pixel
9	Peaking
10	False Color
11	Exposure (Only available under SDI mode)
12	Histogram(Only available under SDI mode)
13	Time Code (Only available under SDI mode)
14	Display Mode
15	Disp Mirror
16	Color Space

3-2. ◄ / ► Buttons Operation

Under non menu screen, press " ◄ / ► " buttons to activate volume bar, Use " ◄ / ► " buttons to select the option in the menu.

3-3. MENU Operation

When power on, press "MENU" on the device, the menu of function setting will display on the screen. Press " ◄ / ► " button to choose menu；

Then press "**MENU**" button to confirm; Press "**EXIT**" button to return / exit menu.

3-3-1. Picture

Picture	Brightness	0~100	
	Contrast	0~100	
	Saturation	0~100	
	Hue	0~100	
	Sharpness	0~4	
	Color Space	Native/Rec.709/User1~User3	
	HDR	Off/Auto/HDR10 (Available only under "HDMI1" mode)	
	Backlight Mode	Standard/Outdoor/User	

	Backlight	0~100 (Note: Available only under "User" mode)	
	Temperature	9300/7500/6500/5800/User	
	Red Gain	0~256	(Note: Available only under "User" mode)
	Green Gain	0~256	
	Blue Gain	0~256	

● **Brightness**

Adjust the general brightness of the LCD. For example, if it uses outside in bright conditions, increase the LCD brightness to make it easier to view.

● **Contrast**

Increase or decrease the range between the bright and dark areas of the image. High contrast can reveal detail and depth in the image, and low contrast can make the image appear soft and flat.

● **Saturation**

Adjust the color intensity. Press " ◀ / ▶ " buttons to increase or decrease the color intensity.

● **Hue**

It means tint. Use this setting to choose the tint from 0 to 100.

● **Sharpness**

Increase or decrease the sharpness of the image. When the sharpness of image is insufficient, the value of sharpness can be increased to make the image clearer.

● **Color Space**

Selects the color space from among [Native], [Rec.709] [User1~User3]：

- Saturation/Hue/Color Temperature is only available under Native mode.

- Select [AUTO] or [HDR10] mode under HDR function, the color space will be saved as Native mode automatically. It can be only changed to other color space mode by hand.

- It supports to upload user-defined Lut table "User1~User3".

- User-defined Lut table only support RGB format. If the format is not correct, please transform it to the correct format by using tool "Lut Converter" (See appendix 1 for details) and named as User1.cube, User2.cube or

User3.cube.

- Copy the User-defined Lut table to flash disk and insert it to the device, the screen displays a prompt message to show whether to upgrade. Select upgrade, the device will be loading automatically in a black screen and then restart after finishing loading.

- Requirements for flash disk

  Format: FAT32

  Memory: <16G

  File directory: root directory

  Must be formatting before using it.

- Please note that the responding time for loading user-defined Lut table will be a bit slower. Please wait patiently.

- The device only supports loading one table at a time. If needs to load more than one tables, please load them one by one.

● HDR

Select HDR from among [Off], [Auto], [HDR10].

- HDR is only available under HDMI 1 signal input.

- HDR under AUTO or DHR10 mode, and the input signal support HDR, the below function is disabled:

Contrast, Brightness, Saturation, Hue, Sharpness, Color Space, BackLight

Color Temperature

- [Auto]

Automatically recognize whether the input HDMI signal supports HDR. If it supports, the input signal shows as the HDR10 performance. If it doesn't, HDR function is disabled. It's suggested select [Auto] when use HDR function.

- [HDR10]

Do not recognize whether the input HDMI signal supports HDR, it will activate the HDR function enforcedly when input signal. If the input signal does not support the HDR function, the image displays abnormal color.

● Backlight Mode

Select Backlight Mode from among [Standard], [Outdoor], [User].

● Backlight

It is only available under [User] mode.

● Temperature

Adjust the color temperature to make the image warmer (Yellow) or colder (Blue). Increase the value to make the image be warmer, decrease the value to make the image be colder. User can use this function to strengthen, weaken or balance the image color according requirements. The standard white light color temperature is 6500K.

Note! ONLY available under "User" mode to adjust Color Gain.
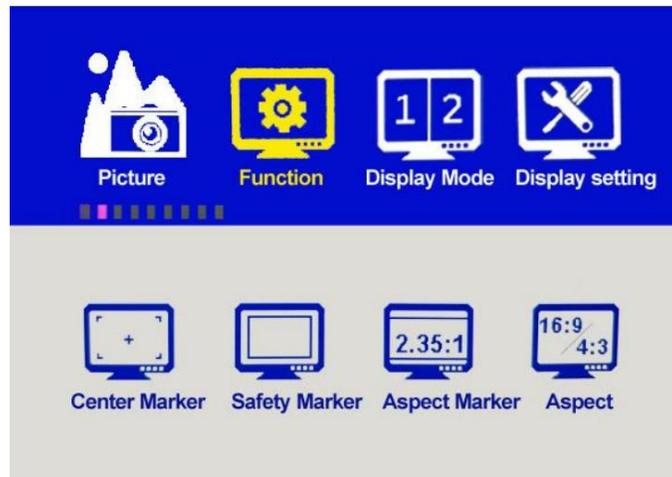
3-3-2. Function

	Center Marker	OFF/ ON
	Safety Marker	OFF, 95%, 93%, 90%, 88%, 85%, 80%
	Aspect Marker	OFF, Full, 17:9, 16:9, 4:3, 1.85:1, 2.35:1
	Aspect	Full ,17:9, 16:9, 4:3, 1.85:1, 2.35:1
	Underscan	OFF/ ON
	Pixel To Pixel	OFF/ ON
Function	Check Filed	OFF/ Red, Green, Blue
	Freeze	OFF/ ON
	Peaking	OFF/ ON

	Peaking color	Red/Green/Blue/White	Only available when under SDI Mode.
	Peaking level	0~100	
	Peaking level	0~100	
	False Color	OFF/ ON	
	Exposure	OFF/ ON	Only available when under SDI Mode
	Exposure level	0~100	
	Histogram	OFF/ ON	
	Time Code	OFF/ LTC/ VITC	

● Center Marker

Select On, it will appear "+" marker on center of screen.

● Safety Marker

Use this setting to set off the safety marker or choose the one of the safety markers: [OFF], [95%], [93%], [90%], [88%], [85%], [80%].

● Aspect Marker

Display the different aspect of the displayed image. [OFF], [Full], [17:9], [16:9], [4:3], [1.85:1], [2.35:1].

● Aspect

Switch aspect ratio setting among from [Full][17:9][16:9][4:3][1.85:1][2.35:1].

For example: In [Full] mode, images are scaled to fill the entire screen.

In [4:3] mode, images are scaled up or down to fill the maximum 4:3 portion of the screen.

In [16:9] mode, images are scaled to fill the entire screen if the device aspect is 16:9.

● Underscan

If the image shows size error, use this setting to zoom in/out pictures automatically when receiving HDMI signals

● Pixel to Pixel

The pixel to pixel is a monitor set to 1:1 pixel mapping with native fixed pixels, which avoids loss of sharpness due to scaling artifacts and normally avoids incorrect aspect ratio due to stretching.

● Check Field

Use the check field modes for monitor calibration or to analyze individual color components of an image. The device preset in Blue, Green, and Red check field modes, only the selected color will be shown.

● Peaking

The peaking is used to aid the camera operator in obtaining the sharpest possible picture. Select "On" to display colored outlines around sharp areas of the image.

Note! Peaking color and level **ONLY** can be changed when under SDI mode.


● False Color

This monitor has a false color filter to aid in the setting of camera exposure. As the camera Iris is adjusted, elements of the image will change color based on the luminance or brightness values. This enables proper exposure to be achieved without the use of costly, complicated external equipment.

● Exposure & Exposure Level

The exposure feature helps the user achieve optimum exposure by displaying diagonal lines over areas of the image that exceed the setting exposure level. The exposure level can be set to 0~100.

Note! **ONLY** available when under SDI mode.

Exposure Level 50

Exposure Level 0
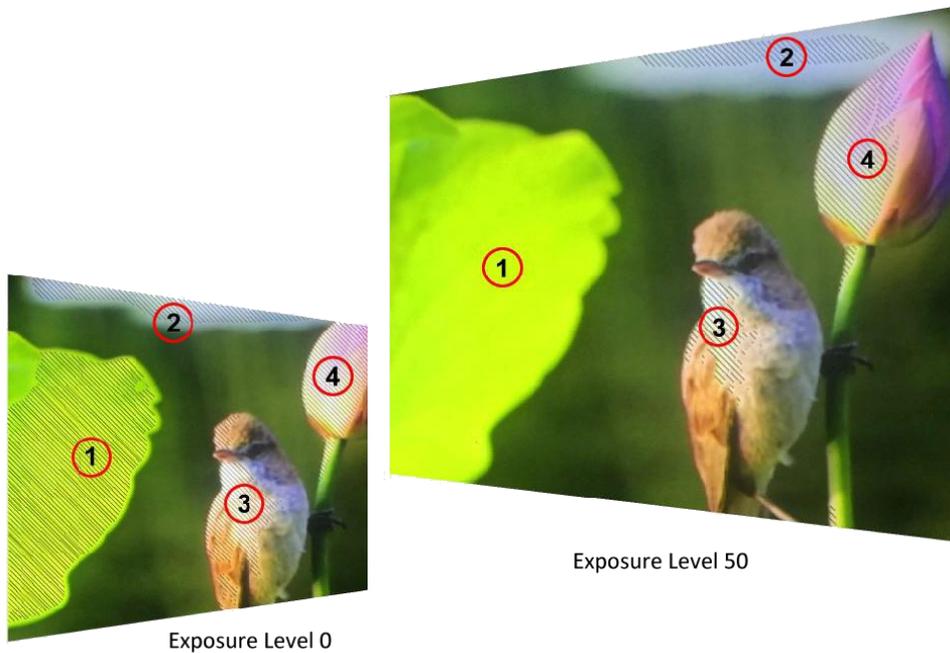
● Histogram

The histogram makes users view visually the exposure of whole and each RGM channels. It has the full contrast rang of video for easy color correction during post production.　NOTE: Only available when under SDI mode.

● Time Code

The Time Code supports Longitudinal time code (LTC) and Vertical interval time code (VITC). The time code display on the monitor is synchronizing with that of Full HD camcorder's. It displays the duration of the clips in hours: minutes: seconds: frames. It's very useful for identifying specific frame in film and video production.

Note! **ONLY** available when under SDI mode.
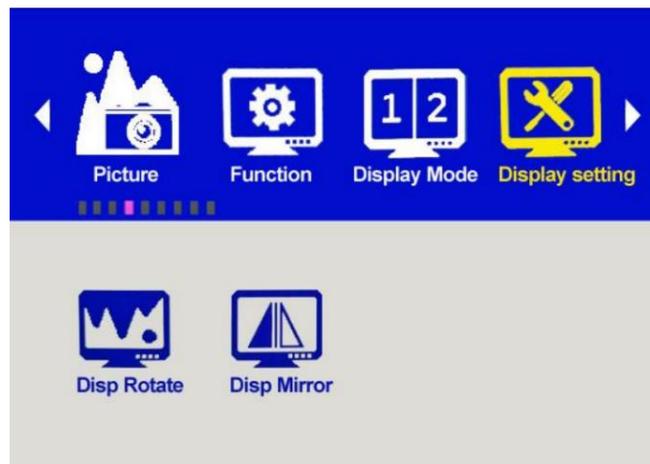
3-3-3. Display Mode
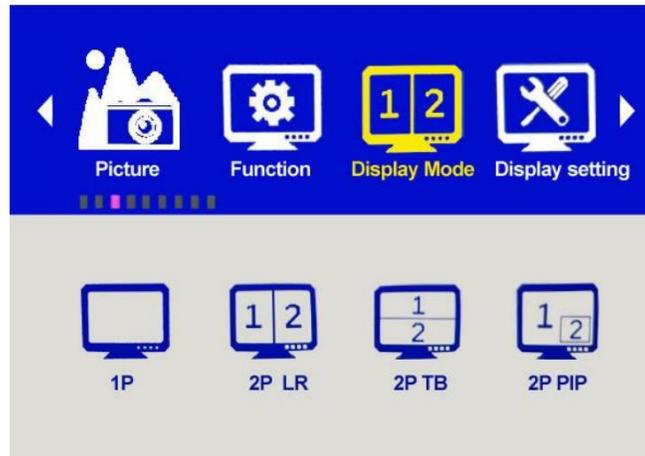
Display Mode	1P，2P LR，2P TB，2P PIP，4P

● Display Mode

The monitor presets 1P, 2P LR, 2P TB, 2P PIP, 4P five display modes. This function can be work with Select Region function to meet user's requirement. For example: In 1P mode, images are scaled to fill the entire screen. In 2P LR, display two different signals on the left and right sides.

3-3-4. Display Settings

| Display Setting	Display Rotate	0°, 90°, 180°, 270°	Available when single display
	Display Mirror	OFF, L/R, U/D	Available when dual display on left and right.

● Display Rotate

This setting support to flip the image to 0°, 90°, 180°, 270° modes. It is only available when single display.

● Display mirror

This setting displays two different input signals to Light/Right or Up and Down, the user can choose it to view the images according to the requirement. It is only available when dual display on left and right.

3-3-5. Select Region
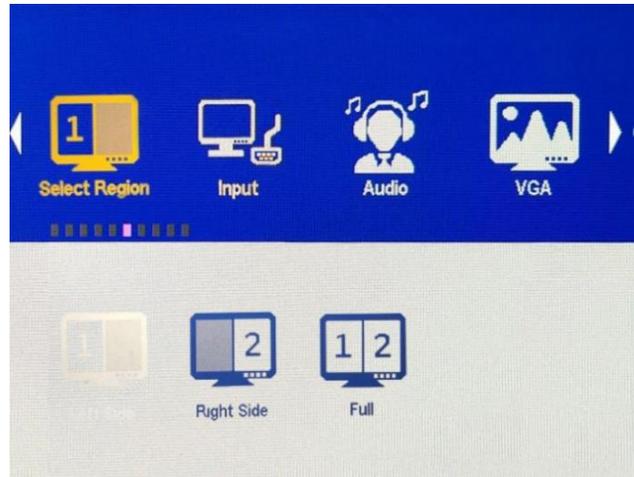
Select Region	Unavailable	Display mode 1P
	Left Side/Right Side/Full	Display mode 2P LR
	Top Side/Bottom Side/Full	Display mode 2P TB
	Main/Sub/Full	Display mode 2P PIP
	1P In/1P Out/2P In/2P Out/3P In/3P Out/4P In/4P Out/4P full	Display mode 4P

Note! This Menu is enabled for audio source selection. It is only available when under multi-picture and picture-in-picture mode. Activate the corresponding EN source to select the needed audio and picture under Audio Source function.

3-3-6. Input

Input	Signal switch to region selected according to users' needs.

3-3-7. Audio

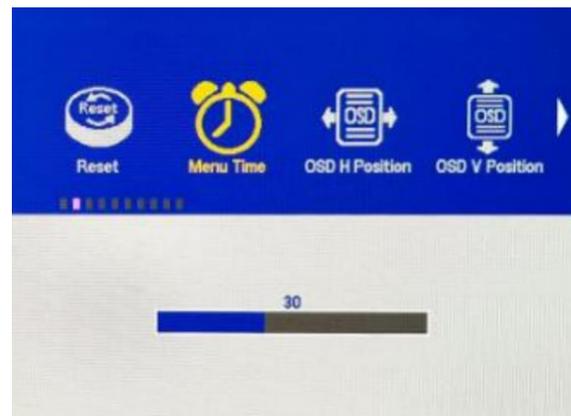| Audio	Volume	0~100	
	Level Meter	OFF/ON	(NOTE: Only available when under SDI mode)
	Audio Source	Analog/Digital region 1~4	

Digital region 2~4 is only available under multi-displays mode and must activate the corresponding Region under Select Region function at the same time.

3-3-8. VGA

VGA	Auto Adjust	
	H Position	0~100
	V Position	0~100
	Clock	
	Phase	0~100

3-3-9. System

System	Reset	Press to confirm after selected.
	Menu Time	10~60s
	OSD H Position	0~100 (To set menu display area)
	OSD V Position	0~100 (To set menu display area)
	Language	English, Chinese
	Transparency	0~255 (To set menu transparency)
	Color Calibration	Off/On
	Rotate	0°, 90°, 270°
	Border Width	0~10
	Border Color	R, G, B, W

● Reset

If there is any problem unknown, press to confirm after selecting. The monitor will return to default set.

● Menu Time

Adjust the OSD displaying time form 10 to 60s.

● OSD H Position and OSD V Position

Move OSD horizontally or vertically.

● Language

Switch between English and Chinese.

● Transparency

Set Menu transparency. Increase the value, the more transparent it will be.

● OSD Rotate

Flip OSD to three modes.

● Border Width and Border Color

User can choose the border color among Red, Green, Blue, White. And adjust the thickness by using Border Width function. This setting is available when display in 2P LR, 2P TB, 2P PIP, 4P mode.

The lines separate the different input signals means Border.

3-3-10. Information

Information	To display current information.

4. Accessories

1. V-mount battery plate	1 piece
2. Tally connector	1 piece
3. Sunshade	1 piece
4. USB drive disk	1 piece
5. WHDI wireless module (optional)	1 pair
6. 12V 3A DC power adapter (optional)	1 piece

5. Parameters

DISPLAY	Panel	12.5" LCD
	Physical Resolution	3840x2160
	Aspect Ratio	16:9
	Brightness	400cd/m2 (+/- 10% @ center)
	Contrast	1500:1
	Viewing Angle	170*/ 170"(H/V)
INPUT	3G- SDI	3G SDI (support up to 1080p 60Hz)
	HDMI	HDMI 2.0 x2 (support up to 4K 60Hz)
		HDMI 1.4b ×2 (support up to 4K 30Hz)
	DVI	1
	VGA	1
	Audio	2 (L/R)
	Tally	1
	USB	1
OUTPUT	3G-SDI	3G SDI (support up to 1080p 60Hz)
AUDIO	Speaker	1
	Ear Jack	1
POWER	Input Voltage	DC 10-24V
	Power Consumption	23W (12V)
	Battery Plate	V-mount battery plate
	Power Output	DC 8V
ENVIRONMENT	Operating Temperature	0'C ~50'C

	Storage Temperature	-10'C ~60'C
DIMENSION	Dimension(WD)	356.8mm x 309.8mm x 122. 1mm
	Weight	4.75kg

6. Trouble Shooting

1) Only black-and-white display.

Check whether the color saturation is properly setup or not.

2) Power on but no pictures.

Check whether the cables of HDMI, VGA，DVI and 3G-SDI are correctly connected or not. Please use the standard power adapter coming with the product package. Improper power input may cause damage.

3) Wrong or abnormal colors.

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

4) When on the picture shows size error.

Press "MENU → Function → Underscan" to zoom in/out pictures automatically when receiving HDMI signals

5) Other problems.

Please press "MENU" button and choose "MENU → System → Reset → confirm"

6) According to the ISP, the machine cannot function properly.

ISP for program upgrades, non-professionals do not use. Please reboot your device if press accidentally!

7) No Sound.

Press HDMI button if no sound; if still unavailable, please contact the technician.

8) No signal displayed when connecting with HDMI 1.

Please long press HDMI 1 button for 3-5 seconds to activate HDMI signal.

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

7. Appendix 1: 3D LUT of Loading Manual

BM-4KS supports 3DLUT to load the color calibration document and the User Log by using flash disk.

● **Format Requirement**

- LUT format：

    Type: .cube

    3D Size: 17x17x17

    Data Order: BGR

    Table Order: BGR

- USB flash disk version
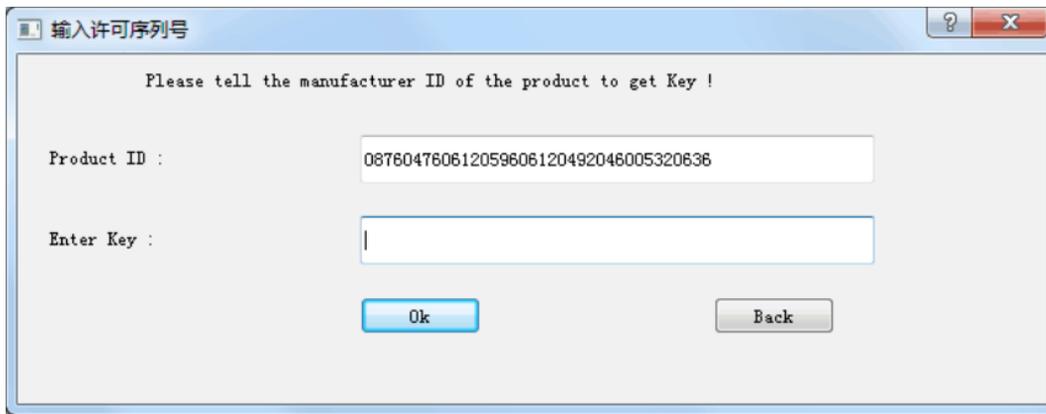
    USB: 2.0

    System: FAT32

    Size: <16G

- Color calibration document: Rec709. cube

- User Log: User1 ~User3.cube

● **LUT Format Conversion**

The format of LUT should be transformed if it doesn't meet Lilliput's requirement. It can be transformed by using Lut Converter (V1.3.30).
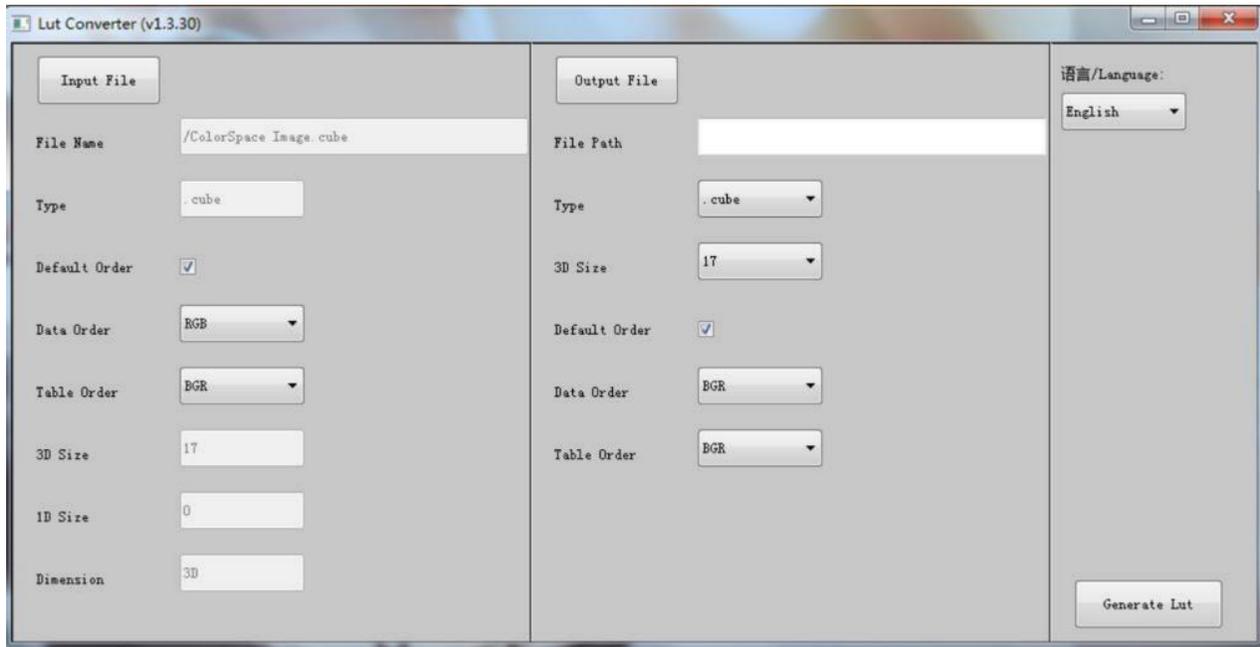
● **Activate Lut Converter**

One individual Product ID for one computer. Please send the ID number to Lilliput to get an Enter Key. Then the computer gets the permission of Lilliput Lut Converter after inputting the Enter Key.

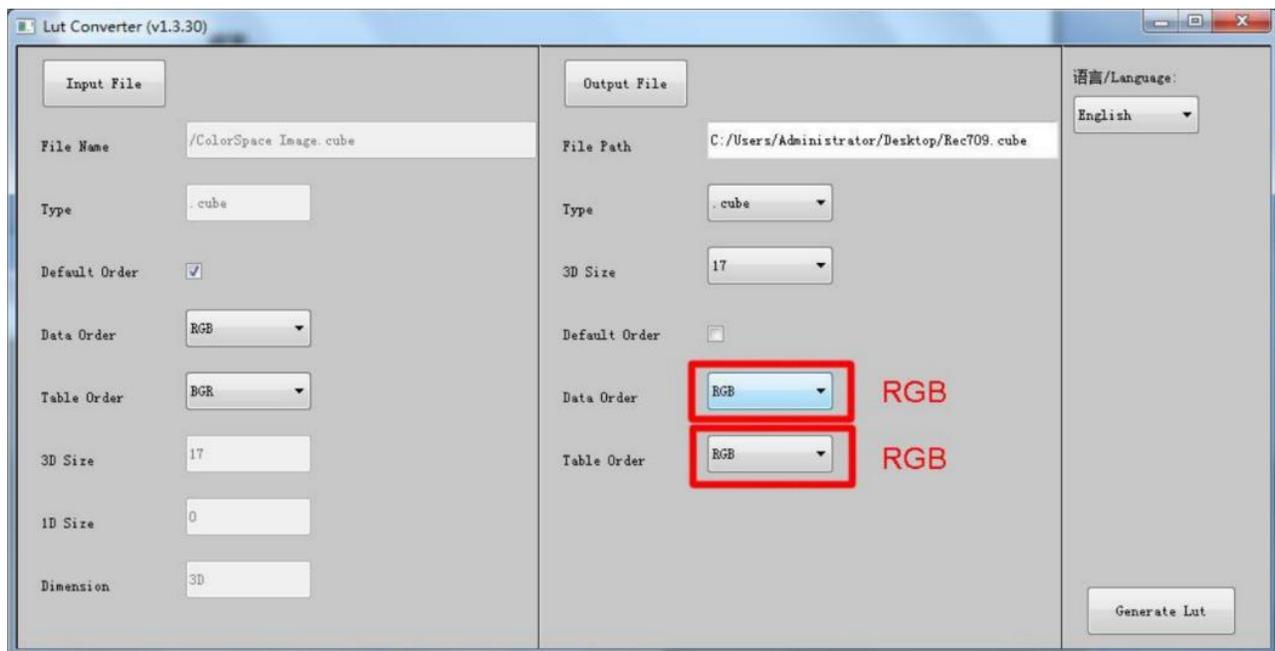● Enter the Lut Converter interface after input the Enter Key
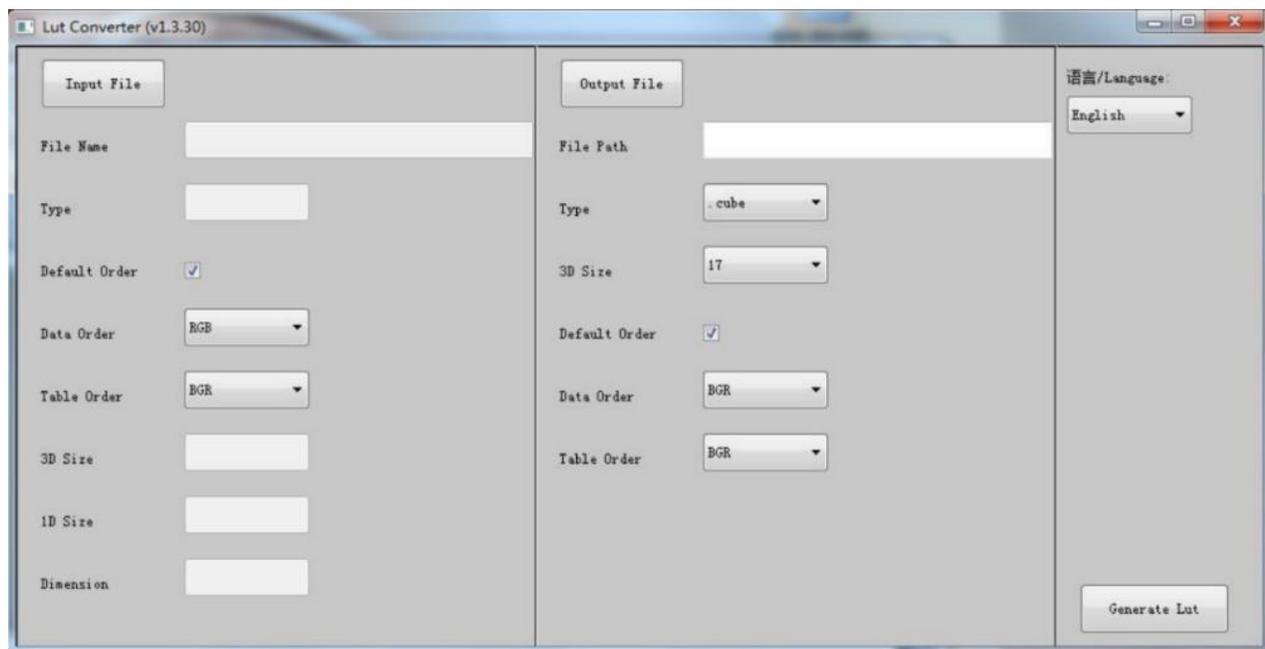
● Click Input File, then select *LUT

● Click Output File, and then select the file name as required format.

*Such as:

Rec709.cube, 3D Size: 17, Data Order: RGB, Table Order: RGB.

Note! The format which shown in Red Box above should be selected to RGB.

● Click Generate Lut button to finish the transform.

● USB Loading

●The USB flash disk must be formatted before using to make sure that there are no other files in the root directory.

●Copy needed files to the root directory of the USB flash drive. Please note that the system only supports updating one LUT table at a time. Therefore, only a single file to be loaded can be copied to the USB flash drive. If it needs to update more LUT tables, please delete other files in USB flash disk and repeat the above steps. ⬚

●Power on the device, insert the corresponding video signal into any video signal interface, and switch the signal to the corresponding channel to make sure the device displays normally. (It doesn't suggest that update the LUT table when there is no input signal as the device will enter the power saving mode in such situation.) ⬚

●Insert the flash disk into the USB interface on the device and wait for about 5 seconds. It will pop-up prompt box "Load Rec709.cube" after detecting the flash disk. Operate by using press "MENU", "◀", "▶", "EXIT" on the front of device. Click "YES" to load, and click "NO" or press "EXIT" to exit. The device displays a black screen after confirmed the loading, and it will update the corresponding LUT table back-stage according to the name of the updated LUT. The device will be restarted automatically after completed. The whole updating process takes about 6 seconds according to the updated LUT name.

●Please activate and set up the updated LUT table under the menu after restart. It doesn't need to be reset if the current updated LUT has been selected before updating.

●Please note it only calibrates the color for Rec709 mode and upload it to the device in the factory. User1~User3 is grayed out and disabled in the menu. After loading the user LUT table, the corresponding button will be shown as blue and able to be use, shown as the following figure.
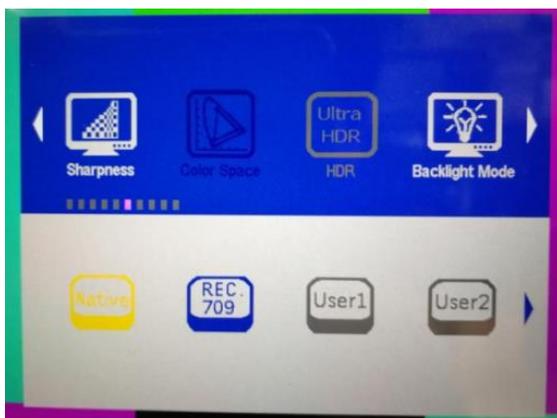
Before loading   After loading
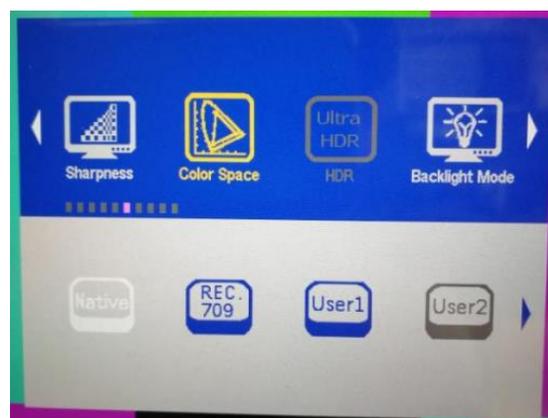
8. Warranty

8-1. Repair Procedure and Terms

8-1-1. Those products bought from Lilliput, we promise to provide one (1) year free repair service. Lilliput warrants its products against defects (excluding physical damage to the product) in materials and workmanship under normal use for a period of one (1) year from the date of delivery. Beyond the warranty period such services shall be charged at the then prevailing rates in Lilliput's price list.

8-1-2. It is possible that you may need to return products to Lilliput for servicing or troubleshooting. Before you send any product to Lilliput, you must e-mail us, telephone us or fax us and wait for a Return Material Authorization (RMA) form to be sent to you. Usually within two business days, your RMA request will be reviewed and we will contact you with the results. If approved, a RMA number will be e-mailed to you. Customers should deliver the defective products to our appointed service center within 15 days from when you receive the RMA number. For our best receipt, the defective products should be properly packed. Letting us know the packaging details, as well as sender and delivery date.

> Note! Returned products **MUST** be subject to the following operations, otherwise, Lilliput has the right to reject.
> - RMA number must be clearly written on the shipping boxes.
> - Returned products must be delivered within 15 days from when we send out the RMA number.
> - Returned items must be in accordance with the RMA form.
> - Malfunction or damage caused by improper packaging during transportation.

8-1-3. Transportation cost which includes shipping charges, duties, insurance, taxes and any other charges for returned products to our repair center is the responsibility of the purchaser. After our verification that the returned product matches our warranty terms and conditions, Lilliput will repair the defective product free of charge, and also bear the resend transportation charge. If the delivered product is confirmed out of warranty, our customer service center will inform the customers. Then, you may decide to pay for the repair items or not.

8-2. Free Repair Exclusions

- Warranty labels of products or accessories are removed or alteration.
- There is no Lilliput RMA number of the returned products.
- Operated and maintained in any manner inconsistent with the manual terms and conditions.
- Malfunction or damage resulting from repairs or alterations made by parties other than Lilliput or an authorized distributor.
- Malfunction or damage caused by forces of nature (for example, earthquake, fire, flood, lighting strike, War, etc).
- Any damages caused by accidents, any unreasonable use or neglect, deterioration, mishandling or failure of maintenance (for example, damages caused in transit).
- Beyond one (1) year warranty period.

Thank You for Using

Lilliput BM120-4KS

LILLIPUT®