

# STORZ

## KARL STORZ—ENDOSKOPE

### Instruction Manual



WM101

24" Medical Touch Monitor

Model No.

MDGP23HAMAC-KS1



## **Important information for users of KARL STORZ instruments**

Thank you for your expression of confidence in the KARL STORZ brand name. Like all of our other products, this product is the result of years of experience and great care in manufacture. You and your organization have decided in favor of a modern, high-quality item of equipment from KARL STORZ.

All essential details of the equipment and all actions required on your part are clearly presented and explained. We thus ask that you read this manual carefully before proceeding to work with the equipment. Keep this manual available for reference in a convenient and conspicuous location near the unit.

Attention: In order to be covered by this warranty, the product shall not have been subjected to displaying of fixed images for long periods of time, resulting in image persistence (afterimage effects), accident, misuse or abuse or operation contrary to the instructions contained in the "Instruction Manual".

Any such conditions will void this warranty.

## **Proprietary Notice and Liability Disclaimer**

The information disclosed in this document, including all designs and related materials, is the valuable property of KARL STORZ and / or its licensors and, as appropriate, they reserve all patent, copyright, and other proprietary rights to this document, including all design, manufacturing reproduction, use, and sales rights thereto, except to the extent said rights are expressly granted to others.

All product names and trademarks or registered trademarks are the property of their respective holders.

## **Warranty Policy**

### **Manufacturer's Warranty**

The guarantees provided can be found in the Standard Conditions of Business of KARL STORZ. The medical device must always be sent to your local subsidiary (see "Subsidiaries" (page 42/43)), even during the warranty period.

### **Limitation of Liability**

KARL STORZ shall be liable for the safe operation, operational reliability, and performance of this equipment only subject to the following conditions:

- all assembly operations, system expansions, readjustments, modifications, or repairs have been performed by a person or persons duly authorized by KARL STORZ.
- all electrical installations at the location of use meet applicable national and local electrical codes.
- the unit has been used in accordance with its operating instructions at all times.

### **Repair Program**

Usually to bridge the repair period, you will receive a unit on loan which you then return to KARL STORZ as soon as you received the repaired unit.

In Germany you can refer repairs direct to

KARL STORZ SE & Co. KG

Abt. Reparaturservice

Take-off Gewerbepark 83

78579 Neuhausen

Servicehotline: +49 7461/708 980

E-Mail: [technicalsupport@karlstorz.com](mailto:technicalsupport@karlstorz.com)

In other countries please contact your local KARL STORZ branch or authorized dealer. See "Subsidiaries" (page 42/43)

# Revision History

The revision letter changes with related comments each time the document is updated.

Revision	Revision Comment	Release date
V0	Initial	2018/11/28

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# 1. Information

## Safety Precautions

### CLASSIFICATION



#### CAUTION

Symbol Description

Caution! -This symbol alerts you to important operating considerations or a potential operating condition that could damage equipment. Refer to user's manual or operation's manual for precautionary instructions.

MEDICAL ELECTRICAL EQUIPMENT  
WITH RESPECT TO ELECTRICAL SHOCK,  
FIRE AND MECHANICAL HAZARDS  
ONLY IN ACCORDANCE

AAMI ES 60601-1:2005+A1

CAN CSA-C22.2 No. 60601-1:14

Classification: Class I

No Applied parts

No AP/ APG

Class I:

No applied parts

Protection against harmful ingress of water is IPX0.

Not suitable for use in the presence of flammable anesthetic's or oxygen.

Mode of operation: Continuous.

## Intended Use

The equipment is intended to be used as a component of a medical patient monitoring system, especially the monitor serves to visualize the function of medical devices.

## Agency Certifications

The following certifications and marks have been issued or declared for this monitor:

### **Safety Approvals:**

ANSI/AAMI ES60601-1:2005/R:2012-08

CAN/CSA-C22.2 No. 60601-1:2014

IEC 60601-1:2005/A1:2012

CE, CCC

### **EMC:**

IEC 60601-1-2:2014

Emission:

EN 55011: 2016

IEC 61000-3-2: 2014

IEC 61000-3-3: 2013

Immunity:

IEC 61000-4-2: 2008

IEC 61000-4-3: 2006+A1: 2008+A2: 2010

IEC 61000-4-4: 2012

IEC 61000-4-5: 2014

IEC 61000-4-6: 2013

IEC 61000-4-8: 2009

IEC 61000-4-11: 2004

FCC Part 15 class B

## CE Declaration of Conformity

We declare under our own responsibility that the product satisfies all the technical relations application to the product within the scope of council:

- 93/42/EEC (MDD)

# FCC

FCC (U. S. Federal Communications Commission)

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may NOT cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the monitor and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult your dealer or an experienced monitor technician for help.

FCC Warning:

To assure continued FCC compliance, the user must use a grounded power supply cord and the provided shielded video interface cable with bonded ferrite cores. Also, any unauthorized changes or modifications to this monitor would void the user's authority to operate this device.

## Precautions

- Make sure to carefully read the Operating Manual prior to using the monitor in order to properly use the monitor.
- Note that, excluding those cases where a responsibility for legal compensation is recognized, the manufacturer shall bear absolutely no responsibility for damage to this product by a customer or a third party that results from the ignoring of contents entered in this Operating Manual and mistaken use.

- Follow the instructions below for safety use of the LCD Monitor.
- To avoid electric shock, do not attempt to remove any cover or touch the inside of the monitor. Only a qualified service technician should open the monitor case.
- Do not insert metal objects or spill liquid into the LCD monitor through cabinet slots. They may cause accident fire, electric shock or failure. If a foreign object inserted or water penetrated, unplug the AC cable and have the monitor serviced.
- Do not cover or block the vent holes in the case.
- Disconnect the power plug from the AC outlet if you will not use it for an indefinite period of time.
- Do not apply pressure to the screen. The LCD is very delicate.
- If your LCD monitor uses an AC/DC Adapter: Only use the Adapter, which accompanied with this device. Use of another AC/DC Adapter may cause a malfunction or danger.
- If your LCD monitor does not operate normally-in particular, if there are any unusual sounds or smells coming from it-unplug the AC cable immediately and contact the manufacturer, authorized or service center.
- Warning – Do not modify this equipment without authorization of the manufacturer.

## General warnings

- All devices and complete setup must be tested and validated before taking into operation.
- The installer needs to foresee a backup system in case the video falls away.
- This equipment shall not be serviced or maintained while in use with the patient.
- **WARNING:** To avoid the risk of electric shock, this equipment must only be connected to a supply with protective earth.
- The plug is used as disconnect to the mains supply, do not to position the ME EQUIPMENT so that it is difficult to operate the disconnection device.
- When replacing parts or check refer servicing to qualified service personnel.
- Additional equipment connected to medical electrical equipment must comply with the respective IEC or ISO standards (e.g. IEC 60601-1 for data processing equipment). Anybody connecting additional equipment to medical electrical equipment configurations a medical system and is therefore responsible that the system complies with the requirements for medical electrical systems. Attention is drawn to the fact that local laws take priority over the above mention requirements. If in doubt, consult your local representative or the technical service department.

## Installation

- Place the equipment on a flat, solid and stable surface. Do not use on the floor.  
If you use an unstable cart or stand, the equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment.
- Do not allow to climb, rest, sitting or stepping on the equipment.
- When adjusting the angle of the equipment, move it slowly so as to prevent the equipment from moving or slipping off from its stand or arm.
- When the equipment is attached to an arm, do not use the equipment as a handle or grip in order to move the equipment. Please refer to the instruction manual of the arm for instructions on how to move the arm with the equipment.
- Provide full attention to safety during installation, periodic maintenance and examination of this equipment.
- Sufficient expertise is required for installing this equipment, especially to determine the strength of the wall for withstanding the display's weight.
- Do not cover or block any ventilation openings in the cover of the set. When installing the device in a cupboard or another closed location, heed the necessary space between the set and the sides of the cupboard.
- Power on after rear cover installed while remove the rear cover after power off.
- The display panel, standard attached to a stand, is compatible with the VESA 100 mm standard.
- Put the display face down on a clean and soft surface. Be careful not to damage the panel screen.
- Unscrew the four fixation screws to detach the panel from the stand.
- Use 4 M4 screws to attach the panel to a VESA approved arm.

## Users to be considered

- Maintenance/repair personnel – only by manufacturer trained and authorized technician.
- Operating personnel – not in consideration for the graphical images at this stage as there are none to consider, however user interfaces such as OSD and control buttons shall be considered.

Installation and OSD adjusting should only be carried by manufacturer trained and authorized personnel.



## Technical data

The monitor is intended for indoor use

Operating Temperature	: 0 ~ 40°C
Operating Humidity	: 10% ~ 90% RH (non-condensing)
Operating Pressure	: 70 kPa ~ 106 kPa
Storage/Transport Temperature	: -20 ~ +60°C
Storage/Transport Humidity	: 5% ~ 95% RH (non-condensing)
Storage/Transport Pressure	: 50 kPa ~ 106 kPa
Rating	: DC24V - 2.5A

## Operating Principle

The scaler is configured with a high-speed integrated ADC (VGA), an integrated DVI/HDMI/DP receiver, a high quality display processing engine, an integrated micro-controller and output LVDS panel interface format.

The user can select the signal ports by front key of monitor then the scaler processing these signals as zoom in or out action to fit the panel resolution. Then through the cable line transmission LVDS signals to one of the LCD module.

The last by the clock controller (Timing Controller, TCON), the clock signal is transmitted to the drive IC on the panel and turn on Backlight for LCD module light source by Scaler control.

## 2. Equipment Symbols

### Electrical and Electronic Equipment Symbols

In addition to the equipment symbols described in your user's manual, the following symbols may be appeared on the monitor.



Alternating current.



Equipotentiality. Connect device to a potential equalization conductor.



European Union Declaration of Conformity.



FCC. USA only. Complies with applicable US government (Federal Communications Commission) radio-frequency interference regulations.



Caution: Consult accompanying documents.



Dangerous voltage. To reduce the risk of electric shock, do not remove cover. Refer servicing to qualified service personnel.



Indicates front.



Please read user manual before using monitor.



Consult the operating instructions.



Standby or power indicator.



This symbol indicates that the waste of electrical and electronic equipment must not be disposed as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer for information concerning the decommissioning of your equipment

## 3. Cleaning Instructions

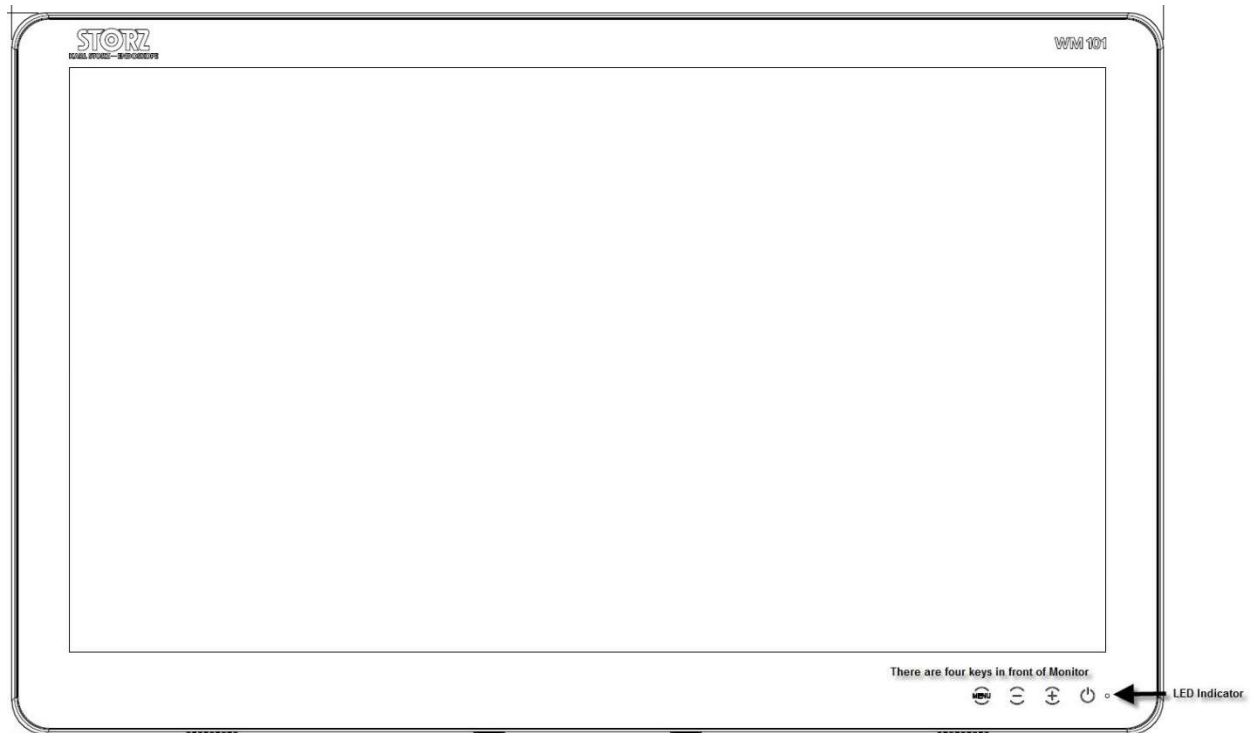
- Be sure to unplug the power cord from the mains when cleaning your LCD monitor.
- Take care not to scratch the front surface with any hard or abrasive material.
- Dust, finger marks, grease etc. can be removed with a soft damp cloth (a small amount of mild detergent can be used on the damp cloth).
- Wipe off water drop immediately.
- Wipe the unit with a clean cloth that has been moistened in the pure water.
- Using a spray applicator, apply 95% Alcohol and use a soft lint free cloth to clean the screen.

## 4. Disposal of the Unit

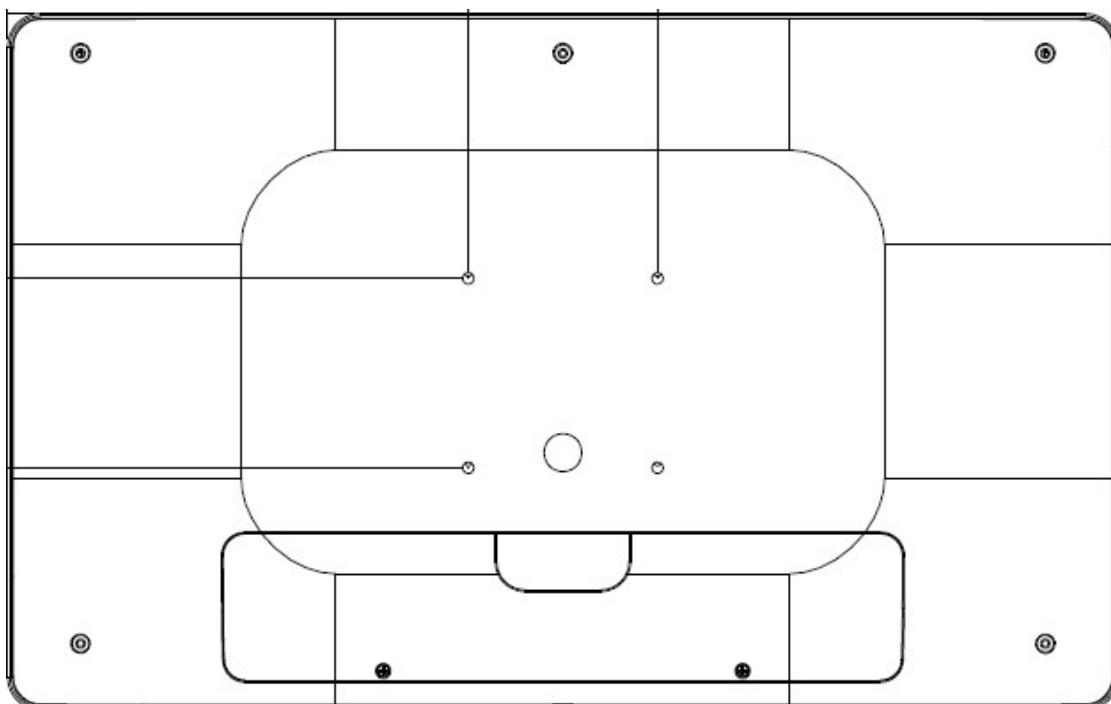
- Do not dispose this product with general wastes.
- Follow your local regulations or rules upon dispose of this product.

## 5. Outline

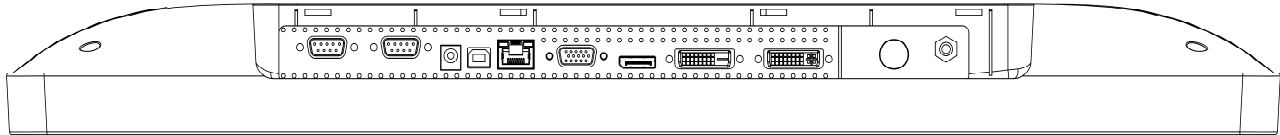
### Front view Overview



### Rear view Overview



## Connector view



Ground	Potential Equalization Bolt
Mini 4 DIN	DC input 24V from external adapter
Input1/DVI-I	DVI 29 pin, single link DVI or analog RGBHV support. Recognize source input (Analog or Digital) automatically PC VGA out over adapter to STAP Input1 / DVI-I(case1) Analog PC out DVI-D to STAP Input1 / DVI-I(case2) Digital PC out DVI-I to STAP Input1 / DVI-I(case3) Analog
Input2/DVI-D	DVI 24 pin, single link DVI support. Use DVI cable to connect the DVI connector of the monitor and the DVI output connector from source device.
Display port	DP20 pin connector, Use DP cable to connect the DP connector of the monitor and the DP output connector from source device.
VGA	DSUB 15 pin connector, Use VGA cable to connect the VGA connector of the monitor and the VGA output connector from source device. (or DVI-I connector from source device via adapter DVI to VGA)
Lan	RJ45 connector RJ45 1x1 Tab up Through Hole 10/100 Base-T LED: L-G; R-Y For remote control by commands.
USB	USB B type connector, link to PC. Self-power USB hub with 1 upstream and 3 downstream devices (1) For ARM MCU download Firmware (2) For Scaler STDP9320 download Firmware (3) For P-cap touch
DC 5V out	DC JACK,5V out/800mA
D-Sub 9pin	RS232 (D-Sub) touch connector (Named “RS232 touch” at I/O label)
D-Sub 9pin	RS232 (D-Sub) serial communication connector (Named “RS232 communication” at I/O label)

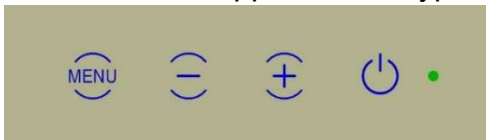
## 6. Operation

### Touch Keypad

Touch Keypad 4 keys with LED indicator. Normally, all of the keypads are invisible. When you touch any of these keypads, the keypad backlight will turn on for 5 seconds, then keypads activation.

When the keypads are visible, press the keypad to execute functions.

When OSD disappear, the keypad backlight will turn off.



### Power (On/off):

Press this button to turn the monitor on.

When the monitor is on, press and hold this button for 3 seconds to turn the monitor off.

When the monitor is off, the green LED goes to off, but Power key blue LED will light as below. You can press power key to turn on Monitor. (DC on)



### Increase (+):

Hot Key: Press to increase brightness value.

When the menu appeared, press to move the cursor up or to increase item value.

### Decrease (-):

Hot Key: Press to decrease brightness value.

When the menu appeared, press to move the cursor down or to decrease item value.

### Menu:

Press to open OSD menu.

When the menu appeared, press to confirm settings in a menu or to enter a sub-menu.

### Power LED indication

Green: Monitor on

Orange: Power saving or no signal

No lighting: Monitor off

## OSD Tree

### Charts of OSD Adjustment Functions

The charts display the function tree and brief explanations of the functions and other adjustments have sub-menus under each tree.

#### OSD display

Main menu display

EXIT

SOURCE

IMAGE

COLOR

PICTURE

MENU

SYSTEM

#### EXIT

Close the OSD Menu by click the EXIT.

From this page, it shows the messages of main & second source and Main source's resolution/H & V frequency.

#### SOURCE

Back .....	Return to "EXIT" page
Main Source .....	Select source for Main-channel
Back .....	Return to "SOURCE" Page
Input1/DVI-I .....	Select DVI-I digital and analog input for Main channel
Input2/DVI-D .....	Select DVI-D digital input for Main channel
DisplayPort.....	Select Display Port input for Main channel
Analog VGA.....	Select VGA analog input for Main channel
Second Source.....	Select source for Sub channel
Back.....	Return to "SOURCE" Page
Input1/DVI-I .....	Select DVI-I digital or analog input for Main channel
Input2/DVI-D.....	Select DVI-D digital input for PIP channel
DisplayPort.....	Select Display Port input for PIP channel
Analog VGA.....	Select VGA analog input for PIP channel



The table shows the PIP/POP combinations.

Main channel	Sub channel				
	DP	DVI 1(DVI-I:DVI)	DVI2 (DVI-D)	VGA	DVI 1(DVI-I:VGA)
DP	X	O	O	O	O
DVI 1 (DVI-I:DVI)	O	X	O	O	X
DVI2 (DVI-D)	O	O	X	O	O
VGA	O	O	O	X	X
DVI 1(DVI-I:VGA)	O	X	O	X	X

## IMAGE

\* Only VGA and input1/DVI-I (A) source

- Back.....Return to main menu display
- Auto Position (\*).....Automatic screen size/position adjustment.
- Brightness.....Adjust the Luminance of the display screen by the range from 0 to 100
- Black Level.....Adjust the black level for the display image by the range from 0 to 100
- Contrast.....Adjust the contrast for the display image by the range from 0 to 100
- Sharpness..... Adjust the sharpness for the display image by the range from 0 to 24
- Display (\*).....Set display image, only support for VGA and input1/DVI-I (A) source
  - Back.....Return to “IMAGE” page
  - H. Position.....Adjust the Horizontal for the display image by the range from 0 to 100
  - V. Position.....Adjust the Vertical for the display image by the range from 0 to 100
  - Clock.....Adjust the clock for the display image by the range from 0 to 100
  - Phase.....Adjust the Phase for the display image by the range from 0 to 63
- Mirroring..... Press up/down key to select Mirroring “OFF” and “VERTICAL” and “HORIZONTAL” function.
  - OFF.....OFF Mirroring function.
  - Vertical.....Make OSD and image vertical mirroring.
  - Horizontal.....Make OSD and image horizontal mirroring.

**COLOR** Default setting should be Neutral + Gamma 2.4.

- Back .....Return to main menu display
- Color Temperature
  - Back.....Return to “COLOR” Page
  - Cool.....Bluish white used for general uses
  - Neutral.....White close to natural light mainly used for publishing trade
  - Warm.....Reddish white suitable mainly for photo modifications
  - User
    - Back.....Return to “COLOR TEMPERATURE” page
    - Red .....User adjusts the gain of Red by the range from 0 to 255
    - Green.....User adjusts the gain of Green by the range from 0 to 255
    - Blue.....User adjusts the gain of Blue by the range from 0 to 255
- GAMMA
  - Back.....Return to “COLOR” Page
  - Gamma 1.8.....Set Gamma curve to curve 1.8
  - Gamma 2.0.....Set Gamma curve to curve 2.0
  - Gamma 2.2.....Set Gamma curve to curve 2.2
  - Gamma 2.4.....Set Gamma curve to curve 2.4
  - Linear.....Set Gamma curve to curve 1 (bypass LUT)

## PICTURE

- Back.....Return to main menu display
- Mode.....You can choose PIP OFF/PIP ON if sub channel have input
- Arrangement.....Set Sub input2 position
  - Back.....Return to “picture” page
  - Aspect.....Press up/down key to select Sub input2 aspect ratio to “AUTO” and “16:9” and “16:10” and “4:3” and “5:4”
  - Proportional.....Adjust the proportional for the Sub input2 by the range from 0 to 30
  - H. Position.....Adjust the horizontal for the Sub input2 by the range from 0 to 100
  - V. Position.....Adjust the vertical for the Sub input2 by the range from 0 to 100
- SWAP .....Swap input between Main input 1 and Sub input2
- PIP Picture .....Adjust sub channel image
  - Back.....Return to “PICTURE” page
  - Black Level.....Adjust the black level for the sub display image by the range from 0 to 100
  - Contrast.....Adjust the contrast for the sub display image by the range from 0 to 100
  - Sharpness.....Adjust the sharpness for the sub display image by the range from 0 to 24

## MENU

- Back.....Return to “EXIT” page
- OSD Position
  - BACK.....Return to “MENU” Page
  - OSD H. Position.....Adjust the H position for OSD by the range from 0 to 100
  - OSD V. Position.....Adjust the V position for OSD by the range from 0 to 100
- OSD Language
  - Back.....Return to “MENU” Page
  - English.....Display OSD in English
  - Deutsch.....Display OSD in German
  - Français.....Display OSD in French
  - Italiano.....Display OSD in Italian
  - 日本語.....Display OSD in Japanese
  - 简体中文.....Display OSD in Simplified Chinese
  - Русский.....Display OSD in Russian
- OSD Timeout (sec).....Adjust the appear time for OSD by the range from 5 to 30 seconds
- OSD Transparent.....Adjust the Transparency for OSD by the range from 0 to 7
- OSD Rotation.....On/off “OSD ROTATION” Function. You can select OFF/90/180/270 for OSD

## SYSTEM

- Back.....Return to “EXIT” page
- Graphic Scaling.....Set input aspect rate to display, only active when PIP off
  - Back.....Return to “SYSTEM” Page
  - Graphic Scaling.....Set image to Full Screen and 16:10 and 16:9 and 5:4 and 4:3 and 1:1 and AUTO
  - Zoom.....Adjust the image for Zoom in or Zoom out by the range from 0 to 100
- Auto Adjustment.....Set AUTO ADJUSTMENT ON or OFF when input timing need auto adjust for analog source
- Auto Source Select.....Set Auto Source ON and OFF when input no valid signal auto change to next source to search signal when all source search 1 time will power saving
- Communication .....Setup the RS232 baud rate and Ethernet IP
  - Back.....Return to “SYSTEM” Page
  - RS232.....Set RS232 Baud Rate 115200 and 19200
  - IP Address.....Set Auto IP or Fixed IP when Auto IP auto get IP address when Fixed IP need set IP address
  - IP1.IP2.IP3.IP4.....Set fixed IP address range from 0 to 255
- Touch Points .....Set Single touch and Dual touch to change touch points
- Recall.....Select “YES” and “NO”. “YES” to Reset all OSD setting to default. “NO” to return to “SYSTEM” page

## Photos Describe the OSD Adjustment Functions

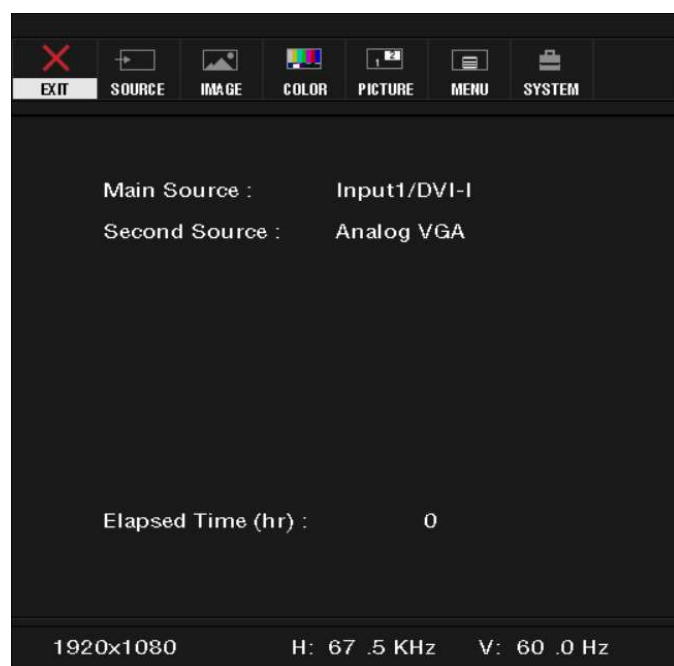
The below photos will detail introduce every menu of OSD tree and brief explanations of the functions.

### Detail of Adjustment Items

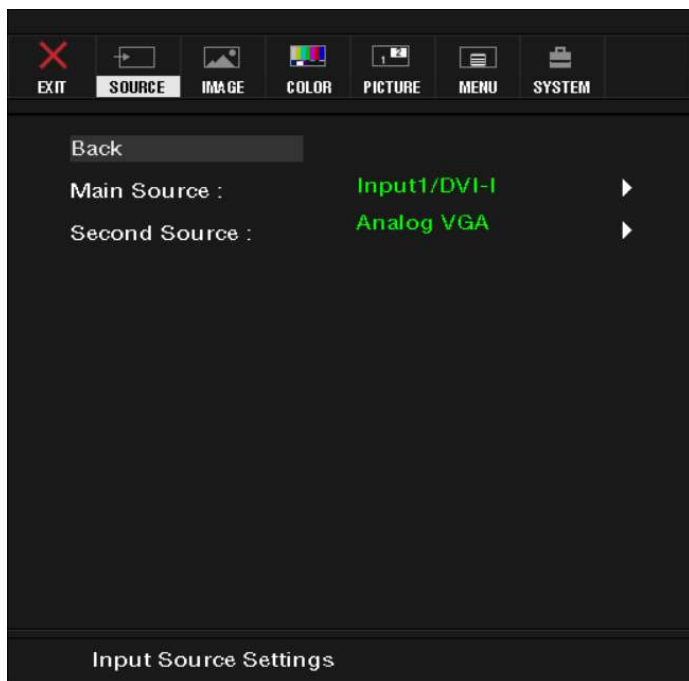
#### ● EXIT

Close the OSD Menu by click the EXIT.

From this page, it shows the messages of main & second source and Main source's resolution/H &V frequency.

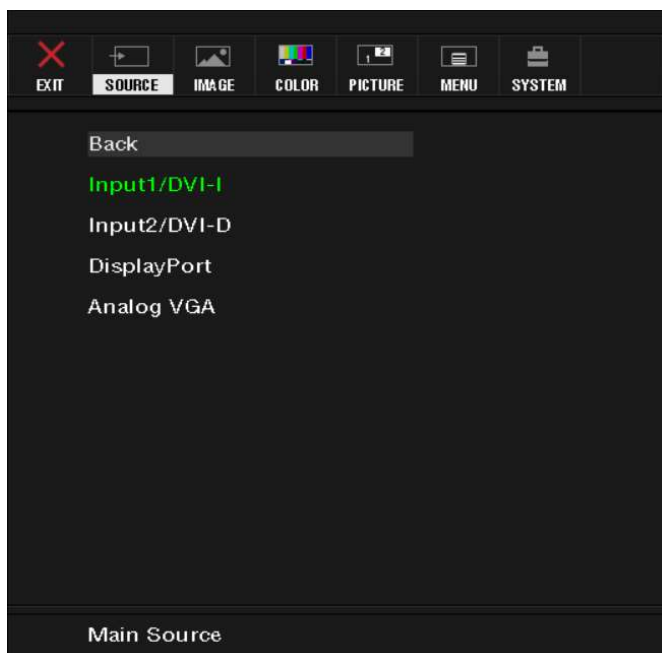


## ● SOURCE



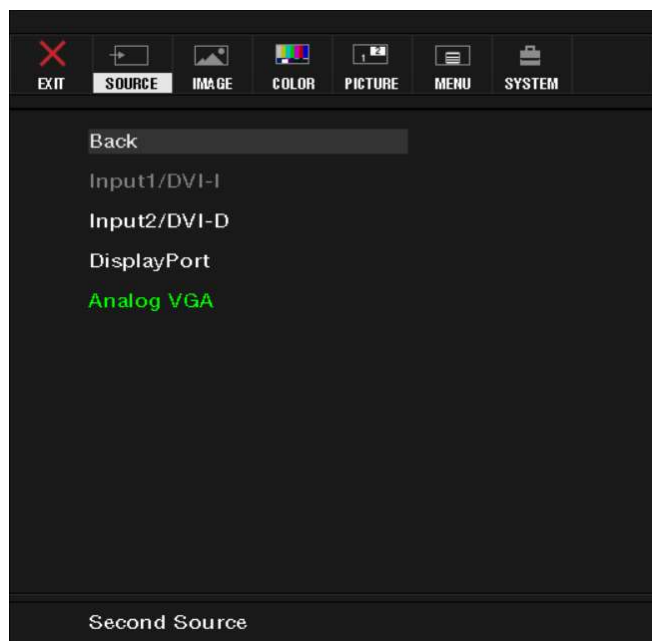
### Main Source

You can select main source for image display from Input1/DVI-I, Input2/DVI-D, DP, VGA. DVI-I may be auto detected if you connect analog RGBHV or DVI digital signals.



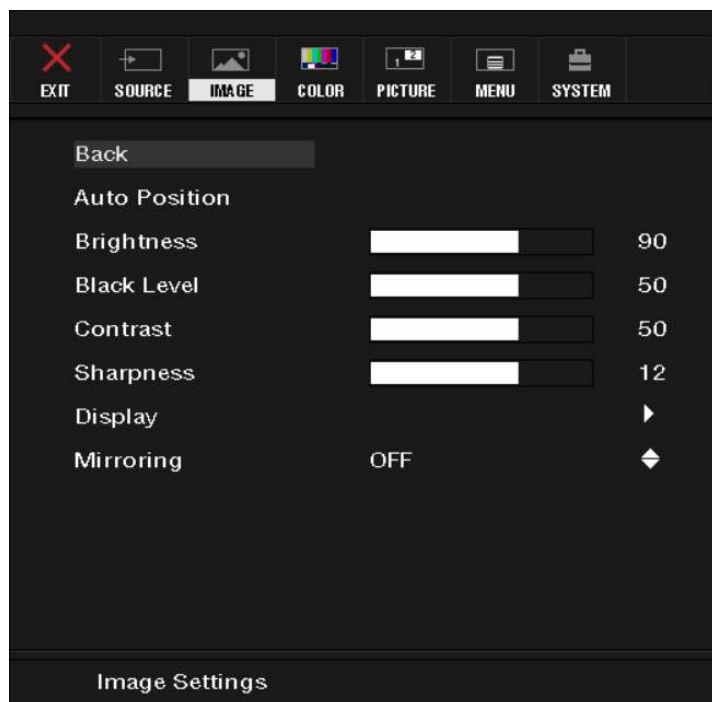
## Second Source

You can select PIP source for image display from Input1/DVI-I, Input2/DVI-D, DP, VGA. DVI-I may be auto detected if you connect analog RGBHV or DVI digital signals.



## ● IMAGE

Adjust values of below items for image display.



### Back

Return to main menu display

### Auto Position

Automatic screen size/position adjustment. (only VGA and Input1/RGBHV)

### Brightness

Selecting this control allows you to make adjustment to the luminosity level of the display screen by the range from 0 to 100

### Black Level

Adjust the black level for the display image by the range from 0 to 100

### Contrast

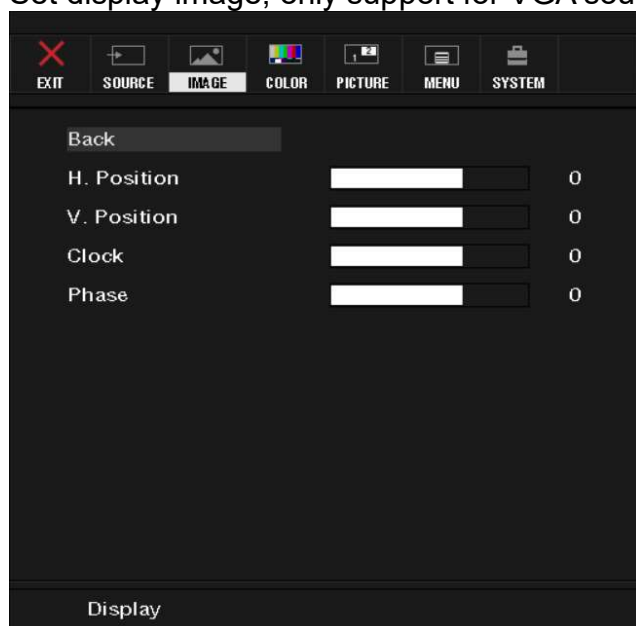
Adjust the contrast for the display image by the range from 0 to 100

### Sharpness

Adjust the sharpness for the display image by the range from 0 to 24

### Display

Set display image, only support for VGA source and Input1/RGBHV



### Back

Return to “IMAGE” page



### H. Position

Adjust the Horizontal for the display image by the range from 0 to 100

### V. Position

Adjust the Vertical for the display image by the range from 0 to 100

### Clock

Adjust the clock for the display image by the range from 0 to 100

### Phase

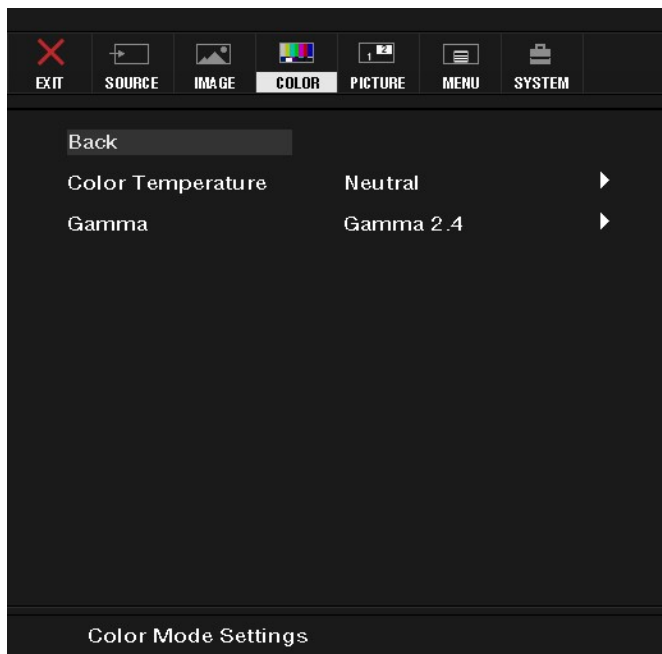
Adjust the Phase for the display image by the range from 0 to 63

### Mirroring

Press up/down key to select Mirroring “OFF” and “VERTICAL” and “HORIZONTAL” function.

## ● COLOR

Default setting should be Neutral + Gamma 2.4.



### Back

Return to Main menu display

### Color Temperature

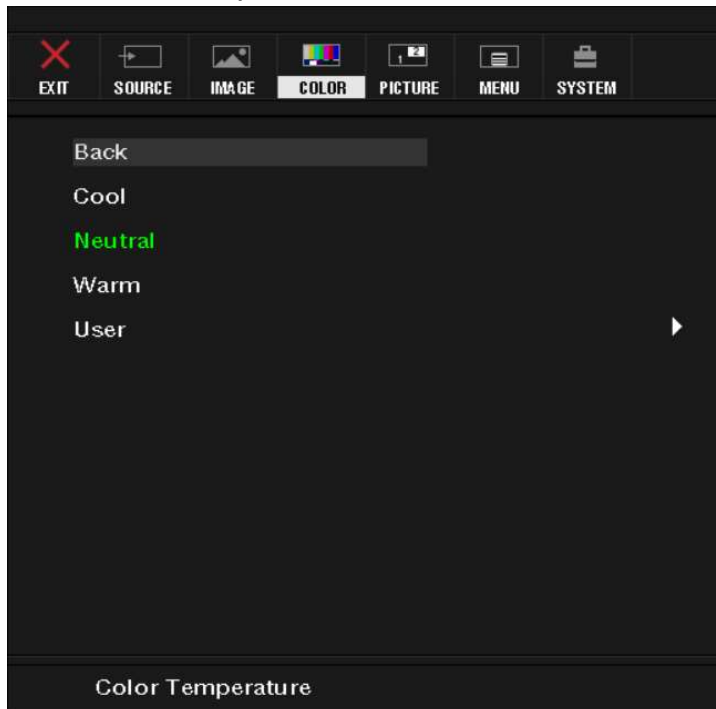
Adjust Color Temperature mode

## Gamma

Adjust gamma curve

## Color Temperature

Select color temperature to Warm and Neutral and Cool and User



## Back

Return to “COLOR” Page.

## Cool

Bluish white used for general uses

## Neutral

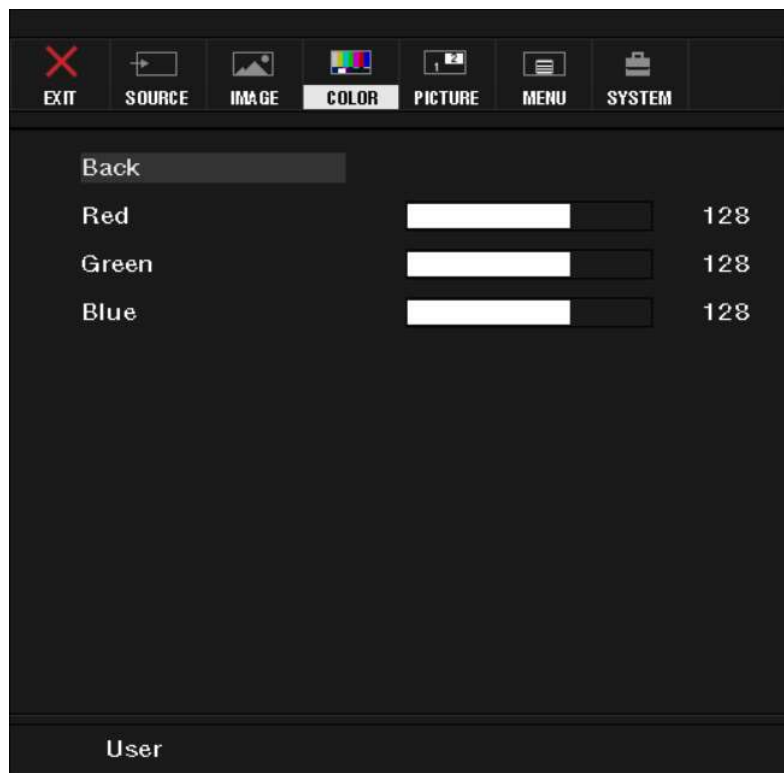
White close to natural light mainly used for publishing trade

## Warm

Reddish white suitable mainly for photo modification

## User

Select this control allows you to adjust the Red gain, Green gain and Blue gain individually to match personal preference



### Back

Return to “COLOR” Page.

### Red

You can adjust the gain of Red by the range from 0 to 255

### Green

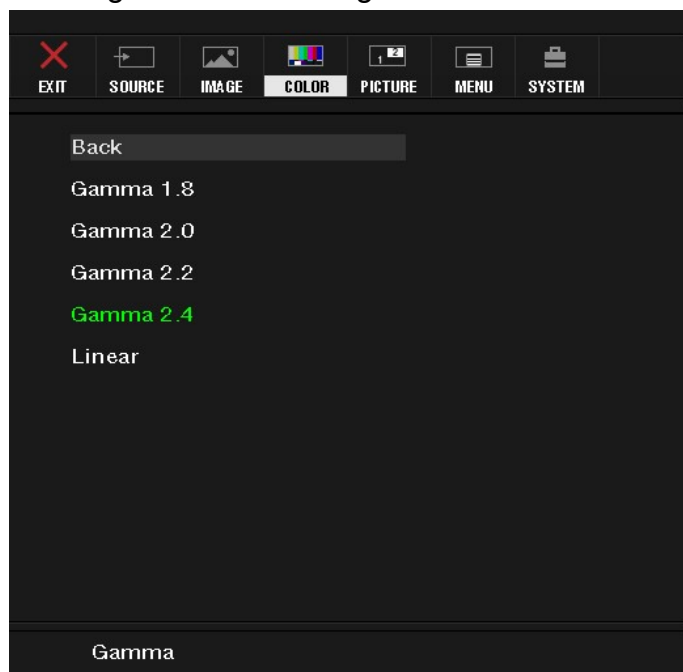
You can adjust the gain of Green by the range from 0 to 255

### Blue

You can adjust the gain of Blue by the range from 0 to 255

## ● Gamma

Select gamma curve for gamma 1.8/2.0/2.2/2.4/Linear



### Back

Return to “COLOR” Page.

### Gamma 1.8

Set Gamma curve to curve 1.8

### Gamma 2.0

Set Gamma curve to curve 2.0

### Gamma 2.2

Set Gamma curve to curve 2.2

### Gamma 2.4

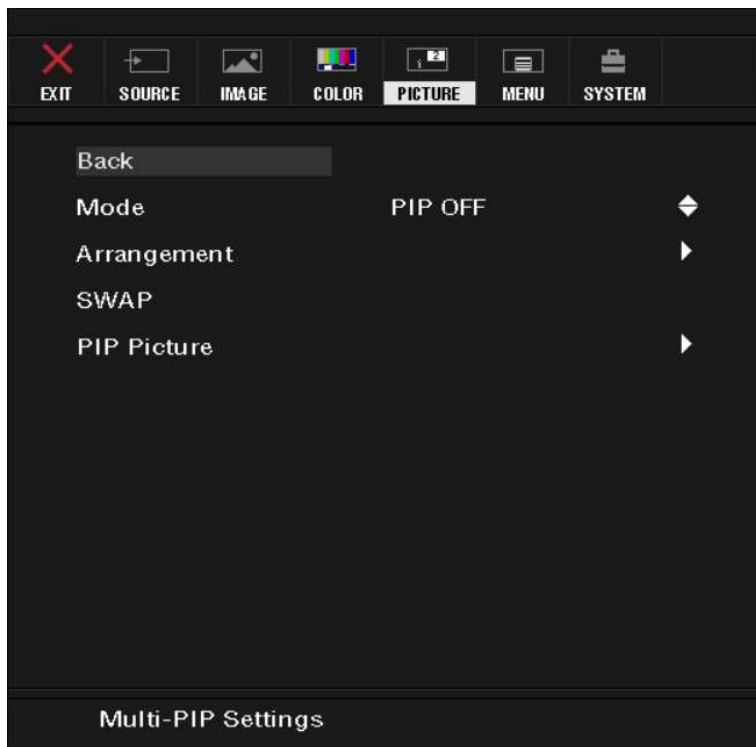
Set Gamma curve to curve 2.4

### Linear

Set Gamma curve to curve 1 (bypass LUT)

## ● PICTURE

You can select this control to adjust PIP/POP mode as below items settings for Sub channel



### Back

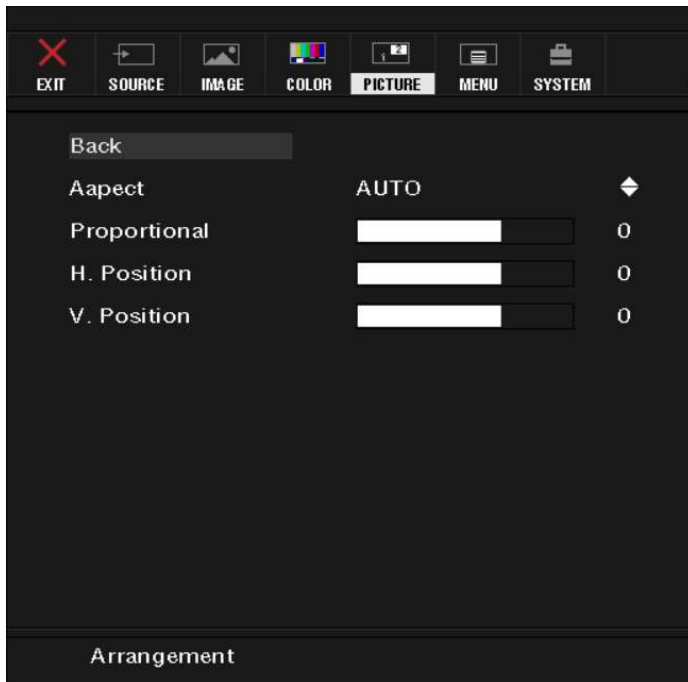
Return to main menu display

### Mode

You can choose PIP OFF/PIP ON if sub channel has input

### Arrangement

Set Sub input2 position



### Back

Return to “picture” page

### Aspect

Press up/down key to select Sub input2 aspect ratio to “auto” and “16:9” and “16:10” and “4:3” and “5:4” picture

### Proportional

Adjust the proportional for the Sub input2 by the range from 0 to 30

### Horizontal

Adjust the horizontal for the Sub input2 by the range from 0 to 100

### Vertical

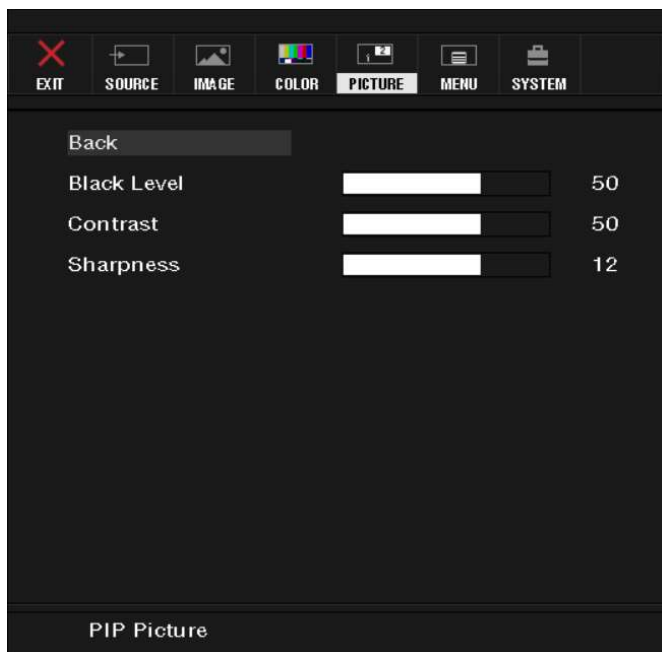
Adjust the vertical for the Sub input2 by the range from 0 to 100

### SWAP

Swap input between Main input1 and Sub input2

### PIP Picture

Adjust sub channel image



### Back

Return to “PICTURE” page

### Black Level

Adjust the black level for the sub display image by the range from 0 to 100

### Contrast

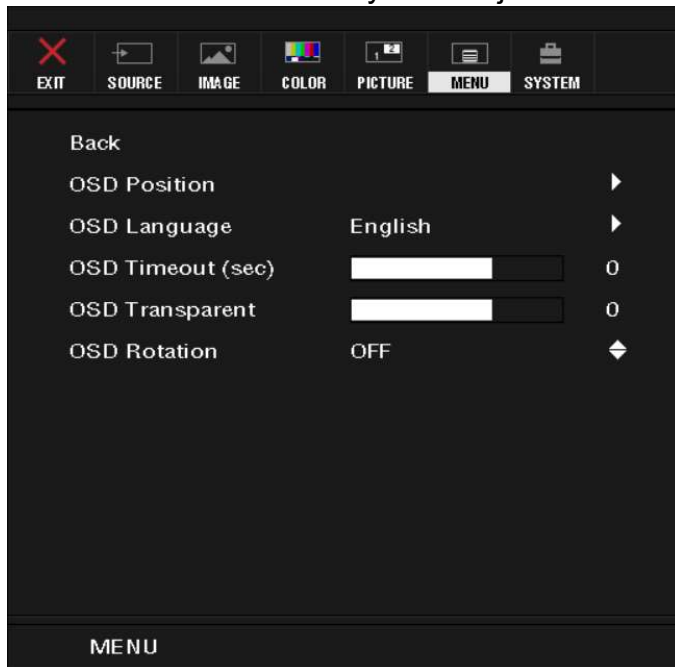
Adjust the contrast for the sub display image by the range from 0 to 100

### Sharpness

Adjust the sharpness for the sub display image by the range from 0 to 24

## • MENU

Select this control allows you to adjust below setting for OSD

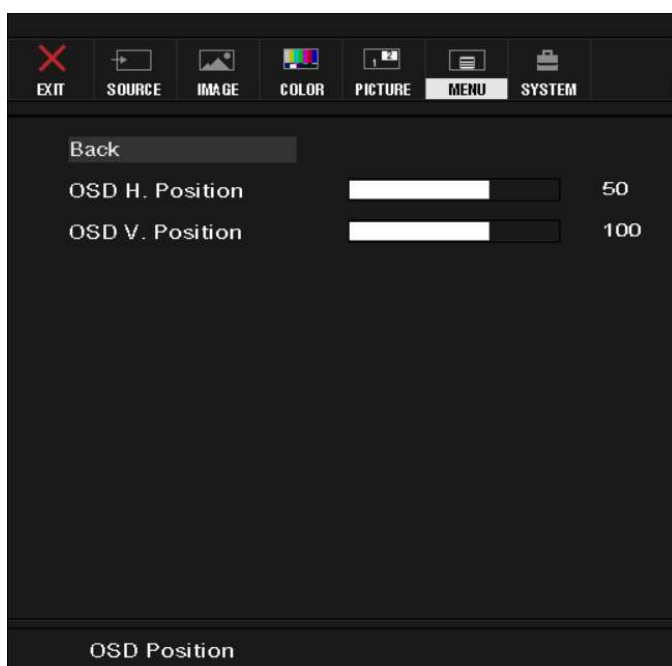


### Back

Return to “EXIT” Page.

### OSD Position

Select this control allows you to Adjust the position for OSD





### Back

Return to “MENU” Page.

### OSD H. Position

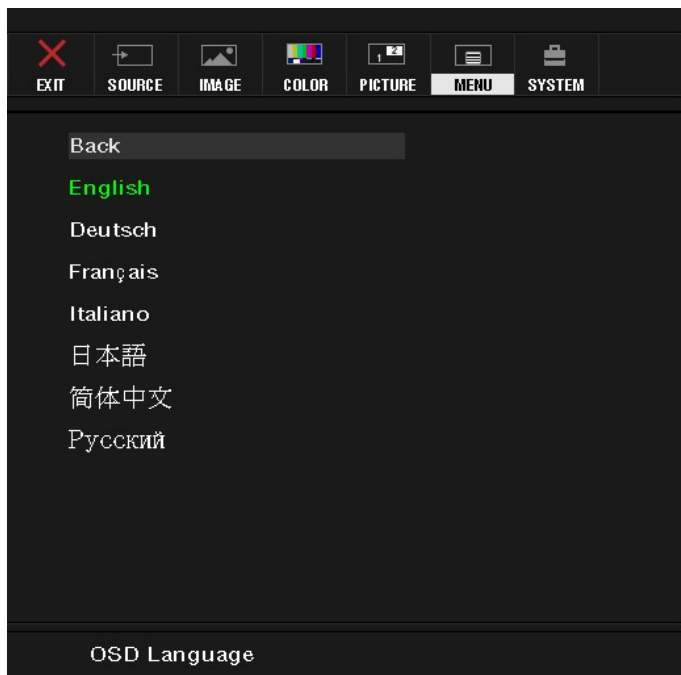
Adjust the H position for OSD by the range from 0 to 100

### OSD V. Position

Adjust the V position for OSD by the range from 0 to 100

### OSD Language

Select this control allows you to choose below languages that you want to display for OSD



### Back

Return to “MENU” Page

### English

Display OSD in English

### Deutsch

Display OSD in German

### Français

Display OSD in French

### Italiano

Display OSD in Italian

### 日本語

Display OSD in Japanese

### 简体中文

Display OSD in Simplified Chinese

### Русский

Display OSD in Russian

### OSD Timeout (sec)

Adjust the appear time for OSD Menu

#### 5s

OSD will disappear after 5 seconds

#### 10s

OSD will disappear after 10 seconds

#### 15s

OSD will disappear after 15 seconds

#### 20s

OSD will disappear after 20 seconds

#### 25s

OSD will disappear after 25 seconds

#### 30s

OSD will disappear after 30 seconds

### OSD Transparent

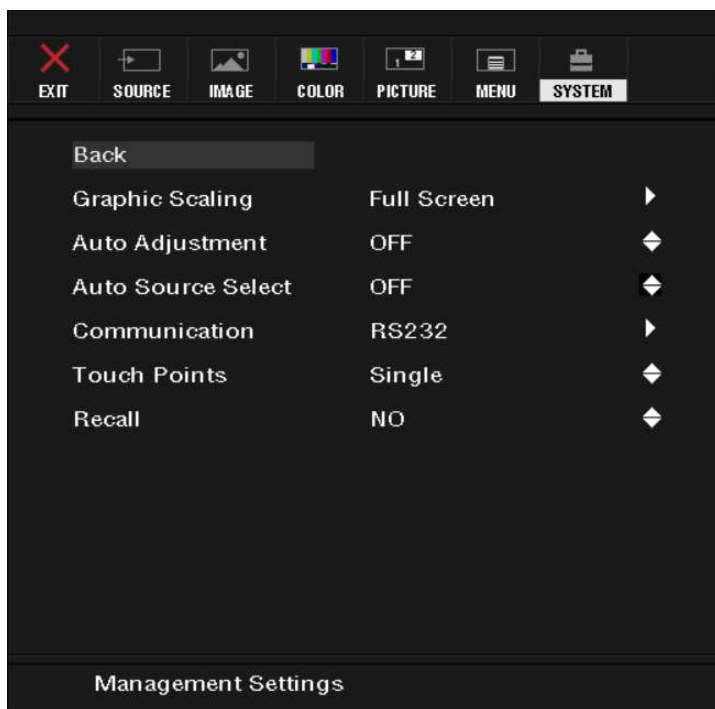
Adjust the Transparency for OSD, there are 0 ~ 7 modes.

### OSD Rotation

On/off “OSD ROTATION” Function, rotation

You can select OFF/90/180/270 for OSD

## ●SYSTEM

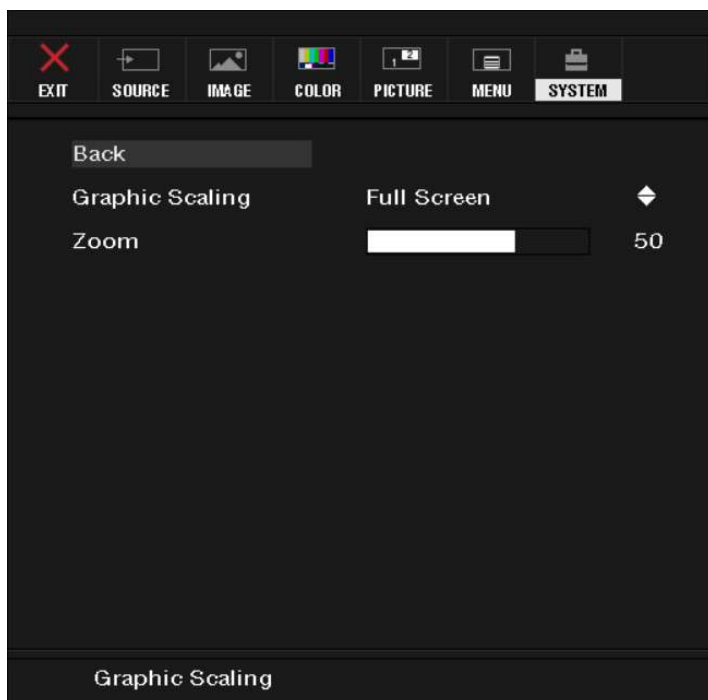


### Back

Return to “EXIT” page

### Graphic Scaling

Set input aspect rate to display, only active when PIP off



### Back

Return to “SYSTEM” page

### Graphic Scaling

SET Full Screen and 16:10 and 16:9 and 5:4 and 4:3 and 1:1 or AUTO

### Zoom

Adjust the image for Zoom in and Zoom out by the range from 0 to 100

### Auto Adjustment

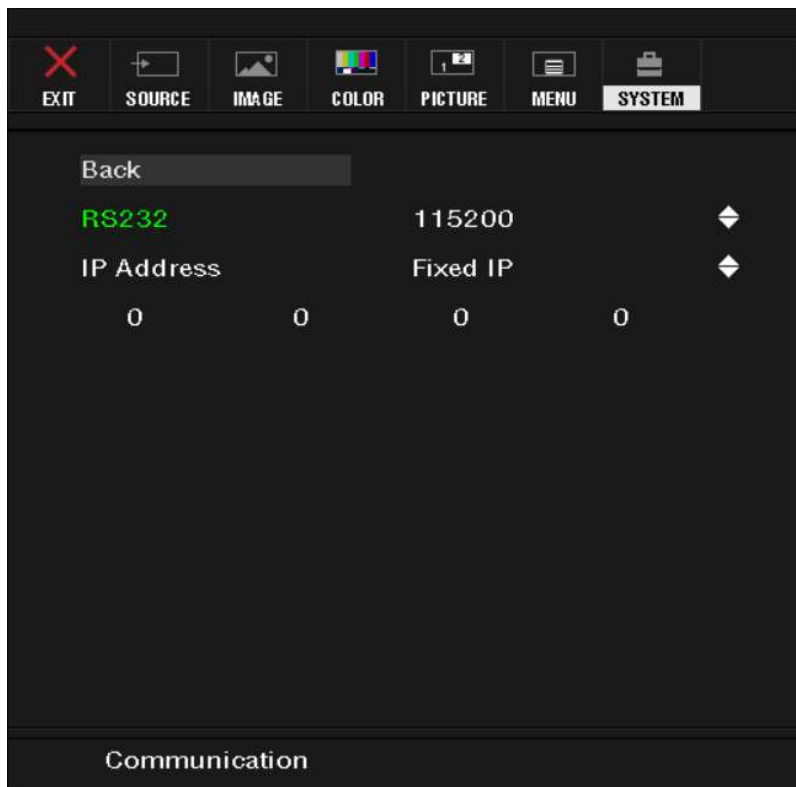
Set AUTO ADJUSTMENT ON and OFF when input timing need auto adjust for analog source

### Auto Source Select

Set Auto Source ON and OFF. If no valid input signal at current source, auto change to next source. When all source have been scanned and no signal, monitor will go to power saving.

### Communication

Setup the RS232 baud rate and Ethernet IP



### Back

Return to “SYSTEM” Page

### RS232

Set baud rate at 115200 and 19200

### IP Address

Set AUTO IP and FIXED IP when AUTO IP auto get IP address when FIXED IP need set IP address

### IP1.IP2.IP3.IP4

Set fixed IP address range from 0 to 255

### Touch Points

Set Single touch and Dual touch to change touch points

### Recall

Select “YES” and “NO”

“YES” to Reset all OSD setting to default.

“NO” to return to “SYSTEM” page

## 7. Display Timing Modes

Timing Table (Standard VESA timing)								
Mode Name	Resolution		Frequency		Input Signal			
	H	V	H(kHz)	V(Hz)	Input1/DVI-I	Input2/DVI-D	DP	VGA
VGA	640	480	31.47	59.94	O	O	O	O
SVGA	800	600	35.16	56.25	O	O	O	O
	800	600	37.88	60.32	O	O	O	O
XGA	1024	768	48.36	60	O	O	O	O
SXGA	1280	1024	63.98	60.02	O	O	O	O
UXGA	1600	1200	75	60	O	O	O	O
1080P	1920	1080	68	60	O	O	O	O

Scan frequency range of operation for all sources

(a) Normal display automatically except VGA/Video in can do auto setup.

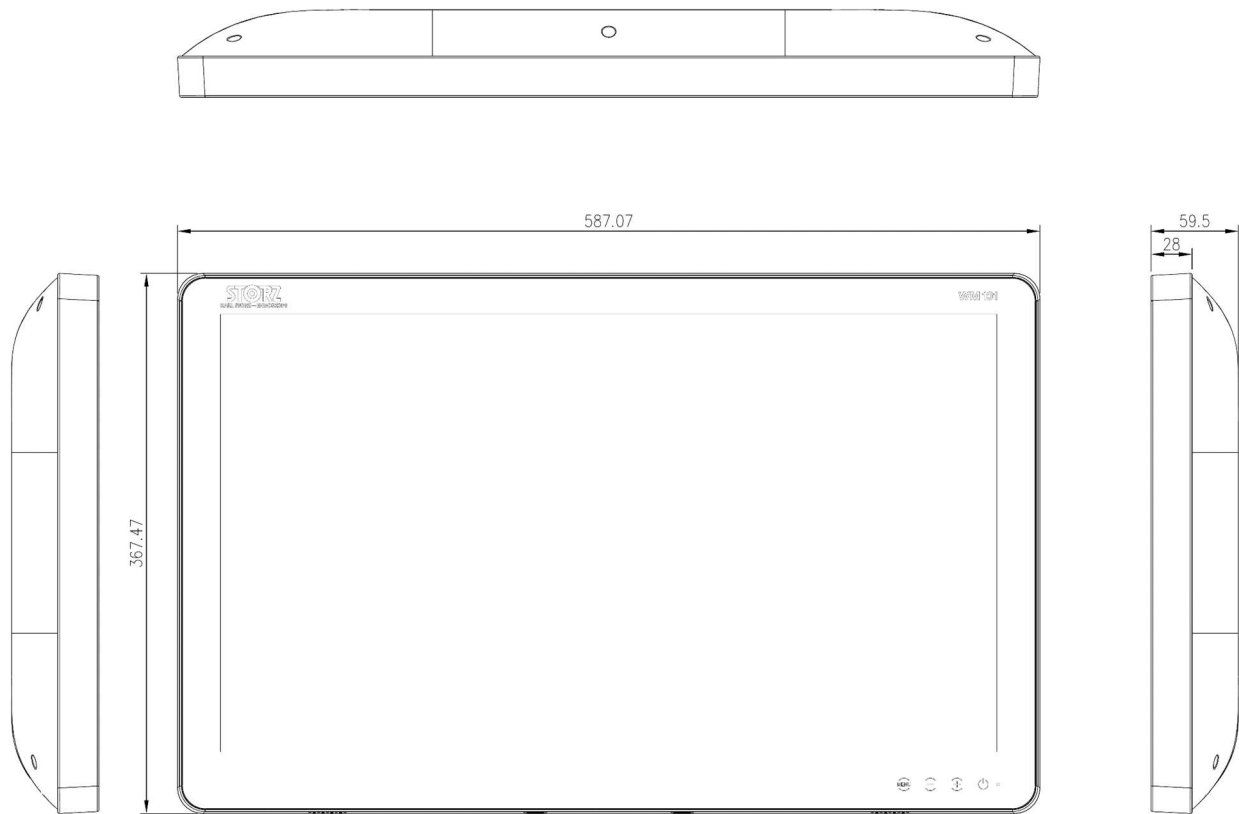
(b) Should be not noise, jitter and flicker occurring.

## 8. Specifications

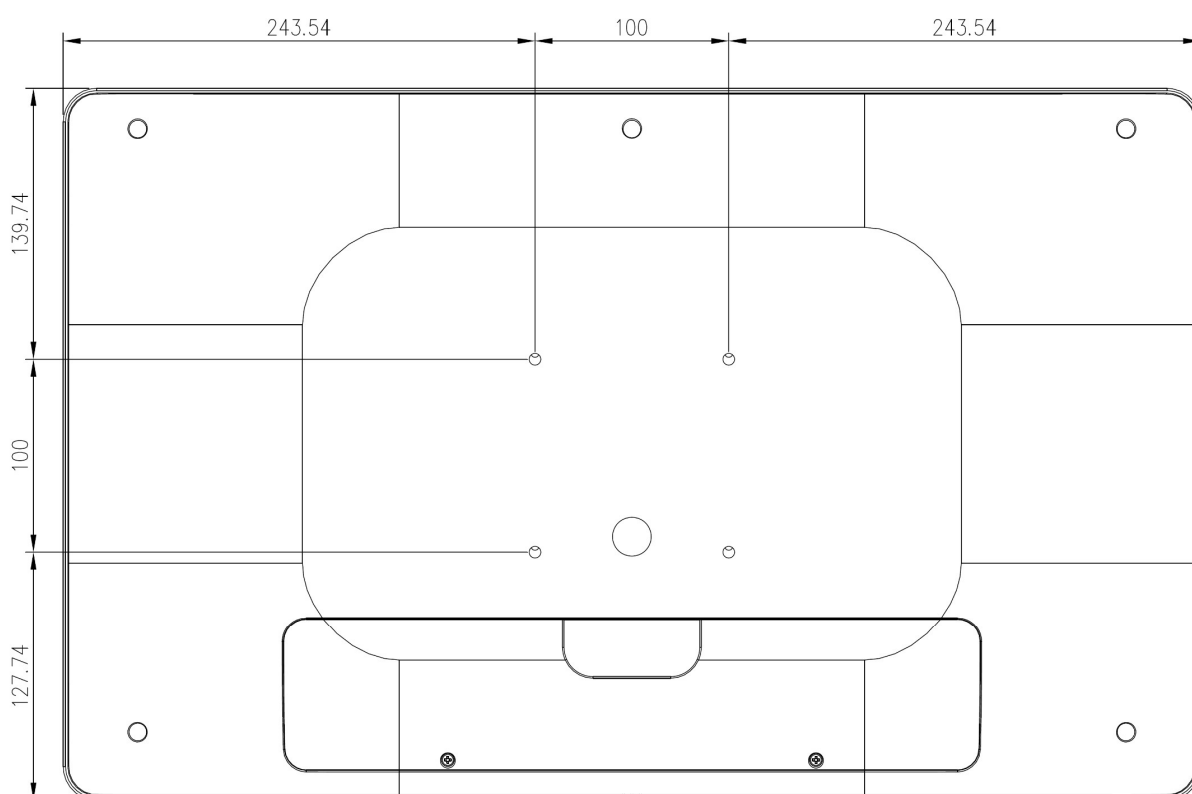
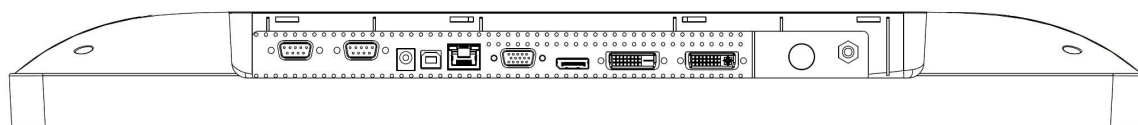
**Product name: 23.8" Color LCD Display (STAP2331LMC)**

Screen technology	TFT active matrix type liquid crystal panel
Active screen size	(diagonal) 23.8"
Active screen size	527.04(H) x 296.46(V)
Aspect ratio (H:V)	16:9
Resolution	1920 x 1080
Pixel pitch	0.2745 mm x 0.2745 mm
Color support	16.7million
Viewing angle (H, V)	178°
Maximum luminance	250 cd/m <sup>2</sup> (Typ.) / 200 cd/m <sup>2</sup> (Min.)
Contrast ratio	1000:1 (Typ.) / 700:1 (Min.)
Response time (Gray to Gray)	G to G = 14 ms (Typ.) 25 ms (Max.)
Power requirements (Nominal)	DC 24V
Power consumption	<40W
Power save mode	Yes
Display dimensions w/o stand (W x H x D)	587 x 367.47 x 59.50 mm
Dimensions packaged (W x H x D)	670 x 495x 165 mm
Net weight display w/o stand	6.8 Kg
Net weight packaged w/o stand	9 Kg
Mounting standard VESA	100*100 mm

## External Dimensions 23.8"









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