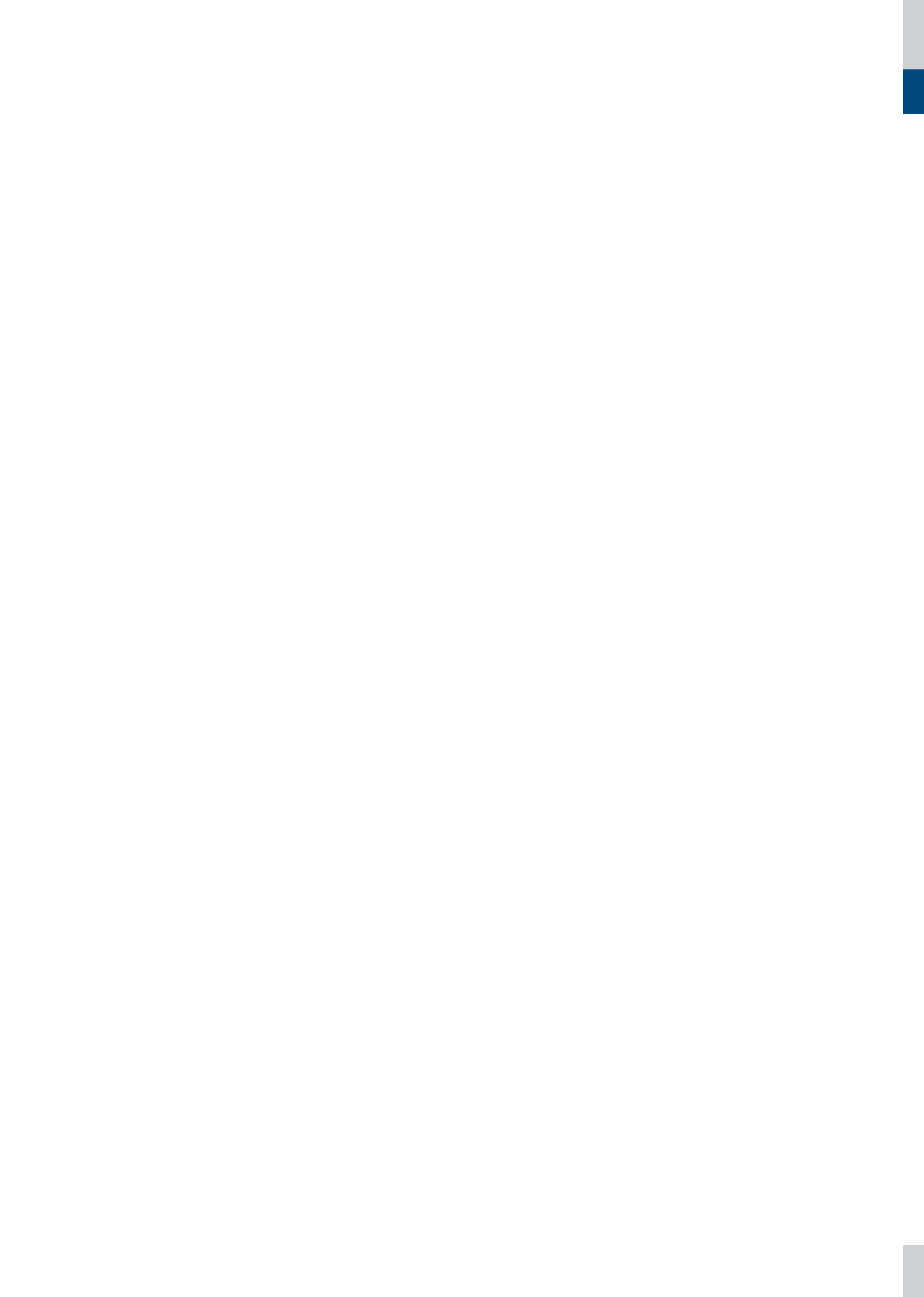


Multi Format 4K LCD Monitor

Operation Manual_v1.6

LUM-310A



Contents

1. Caution	04
2. Main Features	06
3. Controls & Functions	07
4. Menu Tree & Adjustment	11
5. Menu Operations	14
[1] PICTURE	14
[2] VIDEO	14
[3] COLOR	15
[4] GPI	17
[5] MARKER	20
[6] F.KEY	21
[7] AUDIO	22
[8] SYSTEM	23
[9] INFORM.	25
6. Button Functions	26
7. VIDEO Support Resolution	27
8. Product Specifications	29

FCC (Federal Communications Commission)

This equipment has been tested and found to comply with the limits for 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 to correct the interference at his own expense

CAUTION: Change or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

Disposal of Old Electrical & Electronic Equipment

(Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packing indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequence for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources.

1. Caution

- **Always use set voltage.**
 - AC 100 ~ 240V
 - DC 24V
- All operating instructions must be read and understood before the product is operated.
 - These safety and operating instructions must be kept in safe place for future reference.
 - All warnings on the product and in the instructions must be observed closely.
 - All operating instructions must be followed.
 - Do not use attachments not recommended by the manufacturer. Use of inadequate attachments can result in accidents.
 - This product must be operated on a power source specified on the specification label. If you are not sure of the type of power supply used in your home, consult your dealer or local power company. For units designed to operate on batteries or another power source, refer to the operating instructions.
 - The power cords must be routed properly to prevent people from stepping on them or objects from resting on them. Check the cords at the plugs and product.
 - Do not overload AC outlets or extension cords. Overloading can cause fire or electric shock.
 - Never insert an object into the product through vents or openings. High voltage flows in the product, and inserting an object can cause electric shock and/or short internal parts. For the same reason, do not spill water or liquid on the product.
 - Do not attempt to service the product yourself. Removing covers can expose you to high voltage and other dangerous conditions. Request a qualified service person to perform servicing.
- If any of the following conditions occurs, unplug the power cord from the DC outlet, and request a qualified service person to perform repairs.
 - a. When the power cord or plug is damaged.
 - b. When a liquid was spilled on the product or when objects have fallen into the product.
 - c. When the product has been exposed to rain or water.
 - d. When the product does not operate properly as described in the operating instructions. Do not touch the controls other than those described in the operating instructions. Improper adjustment of controls not described in the instructions can cause damage, which often requires extensive adjustment work by a qualified technician.
 - e. When the product has been dropped or damaged.
 - f. When the product displays an abnormal condition. Any noticeable abnormality in the product indicates that the product needs servicing.
 - In case the product needs replacement parts, make sure that the service person uses replacement parts specified by the manufacturer, or those with the same characteristics and performance as the original parts. Use of unauthorized parts can result in fire, electric shock and/or other danger.
 - Upon completion of service or repair work, request the service technician to perform safety checks to ensure that the product is in proper operating condition.

1. Caution

- When mounting the product on a wall or ceiling, be sure to install the product according to the method recommended by the manufacturer.
- Unplug the power cord from the DC outlet before cleaning the product. Use a damp cloth to clean the product. Do not use liquid cleaners or aerosol cleaners.
- Unplug the power cord from the AC outlet if you do not use the product for considerably long time.
- Do not use the product near water, such as bathtub, washbasin, kitchen sink and laundry tub, swimming pool and in a wet basement.
- Keep the product away from direct rays of the Sun-light.
- Do not place the product on an unstable cart, stand, tripod or table. Placing the product on an unstable base can cause the product to fall, resulting in serious personal injuries as well as damage to the product. Use only a cart, stand, tripod, bracket or table recommended by the manufacturer or sold with the product. When mounting the product on a wall, be sure to follow the manufacturer's instruction. Use only the mounting hardware recommended by the manufacturer.
- When relocating the product placed on a cart, it must be moved with the utmost care.
- Sudden stops, excessive force and uneven floor surface can cause the product to fall from the cart.
- The vents and other openings in the cabinet are designed for ventilation. Do not cover or block these vents and openings since insufficient ventilation can cause overheating and/or shorten the life of the product. Do not place the product on a bed, sofa, rug or other similar surface, since they can block ventilation openings. This product is not designed for built-in installation; do not place the product in an enclosed place such as a bookcase or rack, unless proper ventilation is provided or the manufacturer's instructions are followed.
- In case of installation the product on the rack, the inside of the product would be overheated due to heat from other devices near by and the decrease of air circulation, which could damage to the monitor. To prevent the damage, please have enough space for the monitors and use fan to avoid heat and maintain the operating temperature. (Refer to the specification of the product).
- The LCD panel used in this product is made of glass. Therefore, it can break when the product is dropped or applied with impact. Be careful not to be injured by broken glass pieces in case the LCD panel breaks.
- Keep the product away from heat sources such as radiators, heaters, stoves and other heat generating products (including amplifiers).

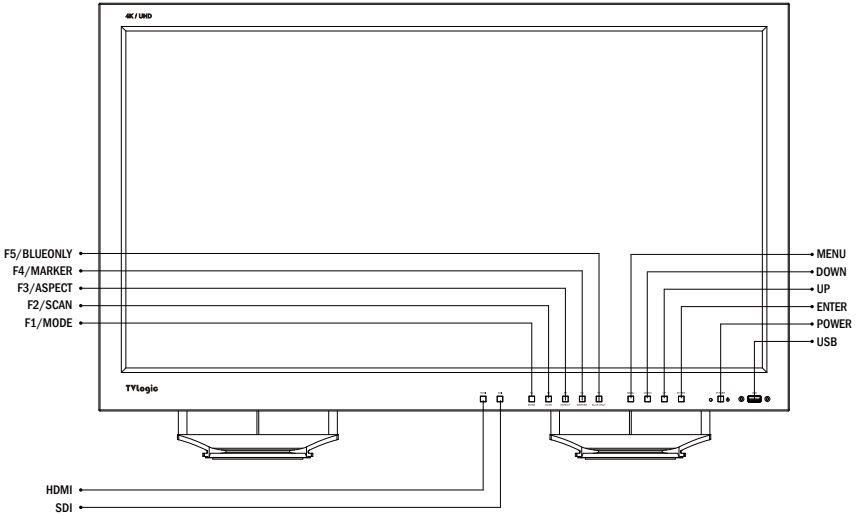
2. Main Features

LUM-310A Monitor contains the following features :

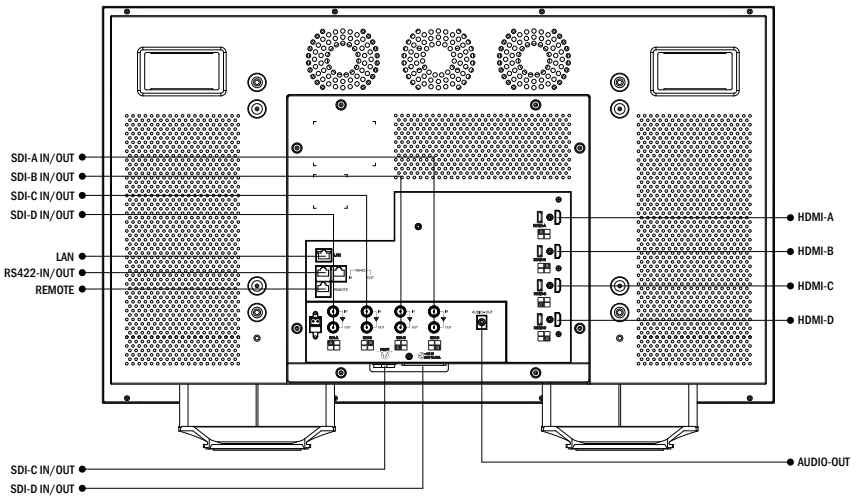
- **Compatible with various SDI signal formats**
 - This product is compatible with various SDI signals - 720P, 1080p, 1080psf.
- **Compatible with various Digital signal formats**
 - This product is compatible with various HDMI Digital signals- 50p, 59.94p, 60p.
- **4K Resolution & Frame Rate**
 - SMPTE 428-1-2006 : 4096 x2160@24p / SMPTE ST 2036-1:2009 : 3840x2160 @23.98p ~ 60p)
- **Cooling Fan support**
 - Helps maintain optimal internal operating temperature.
- **Remote control function**
 - This product can simply be remote controlled by cable connection without additional peripheral equipment attached to unit.
- **RS422 protocol support**
 - This product supports protocols provided by TVLogic.
- **Ethernet & USB support**
 - Supports Ethernet and USB connection for program download and monitor control.
- **HDMI(1.4) support**
 - 4 x HDMI (1.4) inputs are available without additional equipment.
- **SDI 3G support**
 - Supports 3G-SDI YCbCr/RGB 4:4:4 and YCbCr 4:2:2 formats.
- **Additional features**
 - Wide Viewing Angle, Active Loop Through (SDI), VESA Mounting Standard and OSD user interface.
 - * Max. Brightness: 850cd/m²
- **Various Color Gamut support**
 - Supports ITU-R BT. Rec.709, DCI-P3(color standard of digital cinema) Rec.2020 and Panel Native.
- **Optimized frame rate support for input content**
 - Automatic detection of input content information and synchronization of the panel's frame rate - 48Hz, 50Hz, 60Hz

3. Controls & Functions

LUM-310A : FRONT



LUM-310A : REAR



3. Controls & Functions

FRONT

● [HDMI] Button/Lamp

- Used to select HDMI input. Previously selected HDMI input selection displays. Press the button to move through the modes: UD MODE(4CH), UD MODE(HDMI-A 1CH), UD MODE(HDMI-B 1CH).

● [SDI] Button/Lamp

- Used to select SDI input. Previously selected SDI input selection displays. Press the button to move through the modes: UD MODE(4CH), 2-SAMPLE INT(4CH), 2-SAMPLE INT(2CH), SDI-A/B/C/D.

● [F1/MODE] Button/Lamp

- Used to select the UD MODE.
- SDI : UD MODE(4CH), 2-SAMPLE INT(4CH), 2-SAMPLE INT(2CH), SDI-A/B/C/D
- HDMI : UD MODE(4CH), UD MODE(HDMI-A 1CH), UD MODE(HDMI-B 1CH)

● [F2 ~ F5] Button/Lamp

- Shortcut key for KEY MAPPING feature in the OSD MENU.
- Selectable options are as follows :

1) UNDER SCAN

- Used to activate various scan mode (Zero scan, 1:1 Scan, Fit Width).

2). ASPECT

- Used to select ASPECT ON/ OFF in Single Mode. Available aspect modes are as below.
SDI : 16:9, 1.85:1, 2.35:1(HD)
HDMI : 16:9, 1.85:1, 2.35:1(HD), 4:3, 16:9 (480p,576p)

3) MARKER

- Used to activate/deactivate the Marker.
- The desired marker can be displayed on the screen properly when the type of marker selected from the main menu.

4) BLUE ONLY

- Activates in the order: BLUE ONLY – MONO.
BLUE ONLY : Used to remove red and green from the input signal and display the screen only under a blue signal.
MONO: Used to remove all colors from the input signal and display the screen only under white and black signal.

3. Controls & Functions

FRONT

5) H/V DELAY

- Used to check horizontal and vertical sync simultaneously by moving the screen up/down/left/right.
- In this mode, the brightness of image automatically increase for easy verification of synchronized signals.

6) FREEZE

- Captures still frame on-screen.

7) VIDEO RANGE

- Used to select the range of brightness.
- * LIMITED(EX) : Output : 16 ~ 255
- * FULL : Output : 0 ~ 255
- * LIMITED : Output : 16 ~ 235
- * EXTENTION : Input : 16 ~ 235 Output : 0 ~ 255

8) COLOR TEMP

- Used to controls the color temperature and allows instant access to p reset the color temperature settings.

9) AUDIO LVM

- Used to activate/deactivate the Audio Level Meter.

● [MENU] Button

- Used to activate the OSD menu.

● [DOWN/BRIGHT] Button

- Used to move up through the menus during the OSD menu activation and also to decrease the value of the selected feature.
- May also be used to control the BRIGHT value during the OSD menu inactivation. Use the UP/DOWN buttons to adjust the value.

● [UP/CONTRAST] Button

- Used to move down through the menus during the OSD menu activation and also to increase the value of the selected feature.
- It may also be used to control the CONTRAST value during the OSD menu inactivation. Use the UP/DOWN buttons to adjust the value.

● [ENTER/VOLUME] Button

- Used to confirm a chosen value (or mode).
- May also be used to control the VOLUME value during the OSD menu inactivation. Use the UP/DOWN buttons to adjust the value.

● [OPERATE] Lamp

- Indicates condition and power status of unit.
- Light turns off when the power is disconnected.
- Standby mode is indicated by a red LED light.
- Normal (active) mode is indicated by a Green LED light.
- Restores to previous status when monitor power turns off and comes back on.

● [POWER] Button

- Used to turn the power on and off.

3. Controls & Functions

REAR

- **[REMOTE] (RJ-45)**
 - Provides connection to control equipment for external monitor control.
 - Features can be changed in the GPI section of OSD menu.
- **[RS422 IN/OUT] (RJ-45)**
 - Used to control the monitor with a protocol provided by TVLogic.
- **[DP-A,B]**
 - Signal input terminal for Display Port signal.
- **[HDMI-A,B,C,D]**
 - Signal input terminal for HDMI A,B,C,D signal.
- **[SDI-A,B,C,D] (BNC)**
 - HD/SD SDI signal input terminal for SDI A,B,C,D signal.
- **[Audio out] (PHONE JACK)**
 - Select the left/right Audio disembedded signal output.
- **[Ethernet & USB]**
 - Ethernet and USB port for easy updates on new functions and color calibration.
 - Used to control the monitor with a protocol provided by TVLogic.
- **~ AC IN**
 - 100 ~ 240V AC 50/60Hz
- **DC IN**
 - 24V

<Warning!!>

When using the product make sure to ground, whenever possible, before connecting the input signal cable in order to prevent any possible damage to the product or connected devices. The damage may include signal noise, malfunction of main board or display panel. And the connected devices such as camera or video source player may also be influenced through signal cable. Please check if the AC power source and the power extender or power distributor is grounded.

4. Menu Tree & Adjustment

[1] Menu Tree

- The product may be controlled and set system-wise through OSD displayed on the screen.



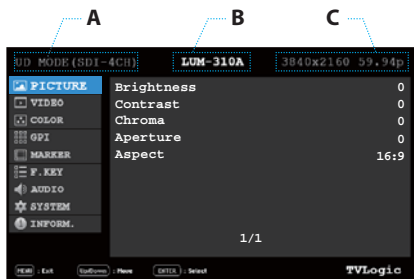
[2] Menu Control

- You may control various functions using MENU, UP/DOWN and ENTER buttons on the bottom front of the monitor.

[3] Menu Control Sequence

1. Press MENU button to activate the OSD menu on the screen.
2. Move to a desired sub-menu with the UP/ DOWN button.
3. After selecting a sub-menu, press ENTER button to select an item with UP/DOWN button.
4. Press ENTER button to select the desired item.
(The selected sub-menu will be highlighted.)
5. Press ENTER button to save the new value after adjusting the value with UP/DOWN button.
6. Press MENU button once to return to previous menu and if there is no previous menu, the OSD menu will be removed from the screen.
7. To view next page in the sub menu, press ENTER button at PAGE I >> PAGE II.

[4] Main Menu Window information



- A. Current input signal
- B. Model Name(LUM-310A)
- C. Current input signal resolution

4. Menu Tree & Adjustment

[5] Menu Tree

PICTURE	Brightness
	Contrast
	Chroma
	Aperture
	Aspect
VIDEO	3G Format
	Video Range Select
COLOR	Color Temp.
	Gain Red
	Gain Green
	Gain Blue
	Bias Red
	Bias Green
	Bias Blue
	Color Copy
	Back Light
	Color Space
	Gamma Curve

GPI	GPI 1 ~ GPI 8
	Group ID
	Monitor ID
	Dhcp
	IP Address
	Subnet Mask
	Gateway
	Port No.
	Apply Settings
MARKER	Marker
	Center Marker
	Safety Area
	Fit Marker
	Marker Mat
	Marker Color
	Marker Thickness
	User Marker H1
	User Marker H2
User Marker V1	
User Marker V2	

4. Menu Tree & Adjustment

[5] Menu Tree

F.KEY	Key LED
	F1 Key Mapping
	F2 Key Mapping
	F4 Key Mapping
	F5 Key Mapping
	Key Lock
AUDIO	Lv Meter Select
	Lv Meter Display
	Lv Meter Reference
	Lv Meter Decay Time
	Lv Meter Size
	Input Select
	Volume
	Em. Audio Left
	Em. Audio Right

SYSTEM	User Config Set
	Lock Number
	Lock Enable
	Osd Display
	Osd Position
	Internal Pattern
	Set Default
	Battery Check
	S/W Upgrade
S/W Upgrade Start	
Fan Control	
INFORM.	Signal Information

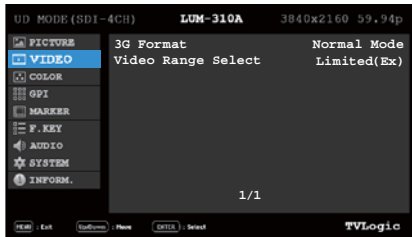
5. Menu Operations

[1] PICTURE



- **BRIGHT**
 - Used to set the brightness(=offset) level from -100 to 100.
- **CONTRAST**
 - Used to set the contrast(gain) level from -100 to 100.
- **CHROMA**
 - Used to set the saturation level from -50 to 50.
- **Aperture**
 - Used to set the sharpness level from 0 to 10.
- **Aspect**
 - Used to change the various display ratio.
 - Only available in Single Mode.

[2] VIDEO



- **3G FORMAT**
 - Selects input format for SDI 3G A/B support (NORMAL MODE, A 444 10BIT_YCbCr, A 444 10BIT_RGB, A 444 12BIT_YCbCr, A 444 12BIT_RGB, A 422 12BIT_YCbCr, B 444 10/12BIT_YCbCr, B 444 10/12BIT_RGB, B 422 12BIT_YCbCr, B 422 10BIT_YCbCr, 60P).
 - Automatically detects when Payload signal appears in normal mode.
- **Video Range Select**
 - Used to select the range of brightness.
 - * LIMITED(EX) : Output : 16 ~ 255 (HDMI/SDI)
 - * FULL : Output : 0 ~ 255 (HDMI/SDI)
 - * LIMITED : Output : 16 ~ 235(SDI)
 - * EXTENTION : Input : 16 ~ 235 Output : 0 ~ 255 (HDMI)
 - In the HDMI mode, activates only when the color format is RGB. (When the color format is YCbCr, operates only within the limited range.)

5. Menu Operations

[3] COLOR



● Color Temp

- Controls the color temperature and allows instant access to preset the color temperature settings.
- Available color temperatures are 6500K, 9300K, CUSTOM1/2/3, 3200K, 5000K and 5600K.
- In CUSTOM 1/2/3 modes, user can define custom RGB GAIN, BIAS (=Offset) and Color Copy values.
- Backlight value is adjustable for each color temperature.

● Gain Red

- Used to set Red Gain(or Picture, Contrast) level from -256 to 255.
- Adjusts the red color of bright section.
- Only available in CUSTOM 1/2/3 mode.

● Gain Green

- Used to set Green Gain(or Picture, Contrast) level from -256 to 255.
- Adjusts the green color of bright section.
- Only available in CUSTOM 1/2/3 mode.

● Gain Blue

- Used to set Blue Gain(or Picture, Contrast) level from -256 to 255.
- Adjusts the blue color of bright section.
- Only available in CUSTOM 1/2/3 mode.

● Bias Red

- Used to set Red Bias(or Offset, mainly affects on Black level) from -100 to 100.
- Adjusts the red color of dark section.
- Only available in CUSTOM 1/2/3 mode.

● Bias Green

- Used to set Green Bias(or Offset, mainly affects on Black level) from -100 to 100.
- Adjusts the green color of dark section.
- Only available in CUSTOM 1/2/3 mode.

● Bias Blue

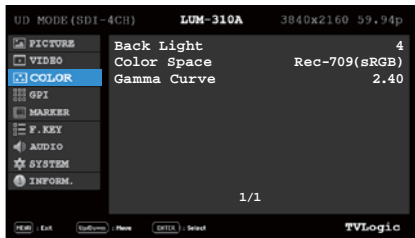
- Used to set Blue Bias(or Offset, mainly affects on Black level) from -100 to 100.
- Adjusts the blue color of dark section.
- Only available in CUSTOM 1/2/3 mode.

● Color Copy

- Used to copy the R/G/B Gain value of pre-stored color temperature settings.
- In User mode, find and select the color temperature to be used with the Up/DOWN button and press the Enter button to copy and apply the Gain value to GAIN RED, GAIN GREEN, GAIN BLUE.
- Only available in CUSTOM 1/2/3 mode.

5. Menu Operations

[3] COLOR



● Back Light

- Used to control the backlight level of the LCD panel.
- Available values are between MIN(0) and MAX(200). Higher value means brighter screen.

● Color Space

- Used to select color space and the mode will be changed as the following sequence.
: NATIVE COLOR -> REC-709(sRGB) -> LUT
SMPTE-C -> LUT EBU -> LUT D-CINEMA

● Gamma Curve

- This item is used when user want to change the Gamma curve as he/she wishes between 1.00 and 3.00. (0.05 STEP CONTROL)

5. Menu Operations

[4] GPI



- This item activates/ deactivates the **REMOTE function.**

- The user may designate a function for each pin and each pin's default setting is as follows

- The selectable functions are as follows:

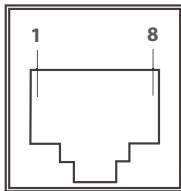
- GPI 1 : SDI
- GPI 2 : HDMI
- GPI 3 : UNDER SCAN
- GPI 4 : 1:1 SCAN
- GPI 5 : ASPECT
- GPI 6 : H/V DELAY

- The selectable functions for GPI 1~ GPI 6 are as follows:

- The pin positions are as follow :

REMOTE (RJ-45)

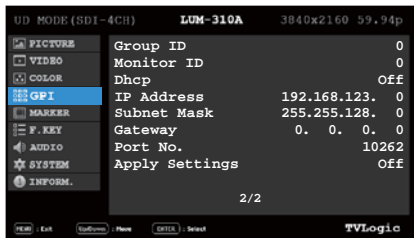
- 1: Pin1
- 2: Pin2
- 3: Pin3
- 4: Pin4
- 5: Pin5
- 6: Pin6
- 7: Pin7
- 8: GND



Menu Classification	Settable Values
PIN 1~6	NONE, SDI CHANNEL, HDMI CHANNEL, UNDER SCAN, 1:1 SCAN, ASPECT, H/V DELAY, BLUE ONLY, MONO, 16:9 MARKER, 4:3 MARKER, 4:3 ON AIR MARKER, 15:9 MARKER, 14:9 MARKER, 13:9 MARKER, 1.85:1 MARKER, 2.35:1 MARKER, 1.85:1&4:3 MARKER, CENTER MARKER, SAFETY AREA 80%,

5. Menu Operations

[4] GPI



● Group ID

- Used to control several monitors in a group for the TVLogic control protocol using RS-422/485 communication.
- Available values are 0~15.

● Monitor ID

- This item sets the ID of each monitor for the TVLogic control protocol using RS-422/485 communication.
- Available values are 0~127.

● Dhcp

- Used to activate/deactivate the DHCP function.

● IP Address

- Used to set the IP Address connected to a Monitor.

● Subnet Mask

- Used to set the SUBNET MASK connected to a Monitor.

● Gateway

- Used to set the GATEWAY number connected to a Monitor.

● Port No.

- Used to set the port number.

● Network Setting Apply

- Use to apply changed value of IP ADDRESS, SUBNET MASK, GATEWAY and PORT NO.

5. Menu Operations

[5] MARKER



● Marker

- Used to select the marker type when the MARKER is displayed on the screen.
- MARKER may only be activated by pressing the MARKER button on the front of the monitor.
- Available marker types are OFF, 16:9, 4:3, 4:3 ON AIR, 15:9, 14:9, 13:9, 1.85:1, 2.35:1, 1.85:1 & 4:3, 4:3 ALT 14:9, 16:9 ALT 14:9, 16:9 ALT 4:3, AFD and USER.

● Center Marker

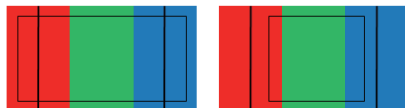
- Displays the Center Marker on the screen.
- This function operates only after activating the Marker function by pressing the MARKER button on the front of the monitor.

● Safety Area

- Used to select to display and control the size and availability of the Safety Area.
- Available sizes are 80%, 85%, 88%, 90%, 93%, 100%, EBU ACTION 16:9, EBU GRAPHIC 16:9, EBU ACTION 14:9, EBU GRAPHIC 14:9, EBU ACTION 4:3 and EBU GRAPHIC 4:3.
- This function operates only after activating the Marker function by pressing the MARKER button on the front of the monitor.

● Fit Marker

- Used to activate or inactivate the Fit Marker function.
- When the Marker type is selected in the Marker menu, a border line of the Safety Area will be displayed inside the Marker. Images below show the difference between Fit Marker ON and OFF.



- | | |
|---------------------|---------------------|
| ● MARKER : 4:3 | ● MARKER : 4:3 |
| ● SAFETY AREA : 90% | ● SAFETY AREA : 90% |
| ● FIT MARKER : OFF | ● FIT MARKER : ON |

● Marker Mat

- Used to set the darkness level outside of the MARKER area from OFF(transparent) to 7(Black).
- The bigger the value, the darker the color.

● Marker Color

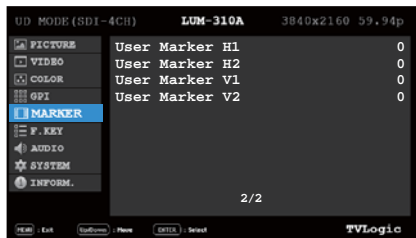
- Used to control the color of MARKER lines.
- Available colors are white, gray, black, red, green and blue.

● Marker Thickness

- This item controls the thickness of the MARKER lines.
- The degrees of thickness are between 1 and 7.

5. Menu Operations

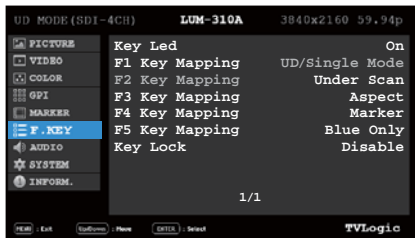
[5] MARKER



- **User Marker H1**
 - Used to set the position of the first horizontal marker line.
 - Displayed when MARKER menu is set to USER.
- **User Marker H2**
 - Used to set the position of the second horizontal marker line.
 - Displayed when MARKER menu is set to USER.
- **User Marker V1**
 - Used to set the position of the first vertical marker line.
 - Displayed when MARKER menu is set to USER.
- **User Marker V2**
 - Used to set the position of the second vertical marker line.
 - Displayed when MARKER menu is set to USER.

5. Menu Operations

[6] F.KEY



● Key Led

- Used to control the Key Lamp on the front of the monitor.
- If the button with LED is pressed with the KEY LED Off, LED comes on but turns off after 5 seconds later.

● F1 Key Setting

- F1 button is fixed for MODE switch feature. Press the F1 button to change the UD mode.
- SDI : UD MODE(SDI-4CH), 2-SAMPLE INT(4CH), 2-SAMPLE INT(2CH), SINGLE MODE(SDI-A/B/C/D)
- HDMI : UD MODE(HDMI-4CH), SINGLE MODE(HDMI-A), SINGLE MODE(HDMI-B)

● F2 Key Setting

- User can select the function for the F2 button.
- Selectable functions: Under Scan, Aspect, Marker, Blue Only, H/V Delay, Freeze, Video Range, Color Temp, and AUDIO LVM.

● F3 Key Setting

- User can select the function for the F3 button.
- Selectable functions: Under Scan, Aspect, Marker, Blue Only, H/V Delay, Freeze, Video Range, Color Temp, and AUDIO LVM.

● F4 Key Setting

- User can select the function for the F4 button.
- Selectable functions: Under Scan, Aspect, Marker, Blue Only, H/V Delay, Freeze, Video Range, Color Temp, and AUDIO LVM.

● F5 Key Setting

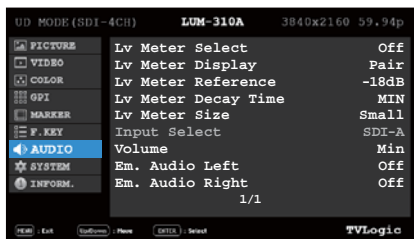
- User can select the function for the F5 button.
- Selectable functions: Under Scan, Aspect, Marker, Blue Only, H/V Delay, Freeze, Video Range, Color Temp, and Audio LVM.

● Key Lock

- Used to lock all buttons except Power, Input select and Menu buttons.
- When the OSD menu is activated, UP/DOWN/ENTER button will be unlocked.

5. Menu Operations

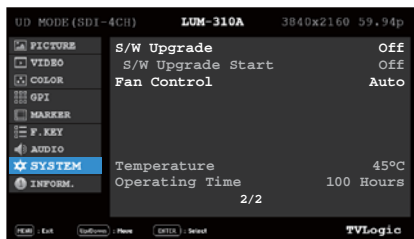
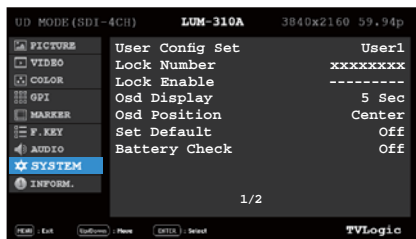
[7] AUDIO



- **Input Select**
 - This function is not supported.
- **Volume**
 - Used to control the output volume of the [AUDIO OUT] terminal on the back of the monitor.
 - Control range is from 0 to 30.
- **Em. Audio Left**
 - Used to set embedded audio channel for left audio out of the [AUDIO OUT] terminal on the back of the monitor.
 - Available values are between CH1~CH16 and OFF.
 - In UD mode(HDMI-4CH), the left sound out of the HDMI A channel is available only.
- **Em. Audio Right**
 - Used to set embedded audio channel for right audio out of the [AUDIO OUT] terminal on the back of the monitor.
 - Available values are between CH1~CH16 and OFF.
 - In UD mode(HDMI-4CH), the right sound out of the HDMI A channel is available only.
- **Level Meter Select**
 - Used to control the Embedded Audio Mode.
 - Available modes are Off, Horizontal-Top, Vertical-Middle and Vertical-Bottom .
- **Level Meter Display**
 - Used to set the display method for Audio Level Meter.
 - Available modes are Group and Pair.
- **Level Meter Reference**
 - Display the default Audio Level Meter value.
 - Available options are -18dB and -20dB.
 - Audio level meter within selected value turns to green and exceeded audio level is displayed in yellow. Audio level exceeding -4dB is displayed in red.
- **Level Meter Decay Time**
 - Sets the reduction time for the max value indication of audio signals.
 - Control range is from 0 to 30. Bigger number means a longer display time for max value.
- **Level Meter Size**
 - Used to control the size of the Audio Level Meters.
 - Available modes are Small, Small Translucent, Normal, Normal Translucent, Large and Large Translucent.
 - In Small, Normal and Large Modes, the level meter appears semitransparent.

5. Menu Operations

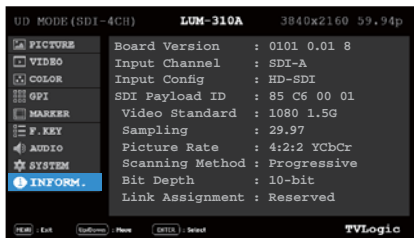
[8] SYSTEM



- **User Config Set**
 - Used to save and apply in three kinds of user configurations.
 - Available modes are USER1, USER2 and USER3.
 - All items can be assignable for each USER1, USER2 and USER3 settings.
- **Lock Number**
 - This function is not supported.
- **Lock Enable**
 - This function is not supported.
- **Osd Display**
 - Used to control the OSD display time.
 - Available values are 5 Sec ~ 20 Sec and Continue.
- **Osd Position**
 - Used to control the OSD position.
 - The OSD position displays on the Center, Right-Top(R-T), Right-Bottom(R-B), Left-Top(L-T) and Left-Bottom(L-B).
- **Internal Pattern**
 - Generates White Pattern internally.
 - Selectable range is from 0% to 100% with 5% increment.
- **Set Default**
 - Used to initialize OSD values to factory default.
- **Battery Check**
 - Used to activate/deactivate the battery output voltage check function.
- **S/W Upgrade**
 - Used to upgrade the firmware using the USB memory (Thumb drive).
 - Set the S/W Upgrade as [ON] to start the USB memory search.
 - When the USB memory is detected, the S/W Upgrade Start menu becomes activated.
- **S/W Upgrade Start**
 - Select the S/W Upgrade Start menu to start the firmware upgrade.
 - Do not turn off the monitor while the Upgrade is conducting.
- **Fan Control**
 - Used to activate/deactivate the cooling fan of the monitor.
 - Set the Fan Control as [ON]. The cooling fan operates automatically when the internal temperature of the monitor is higher than the set temperature.
- **Temperature**
 - Displays the internal temperature of the monitor.
- **Operating Time**
 - Displays the total usage time of the monitor

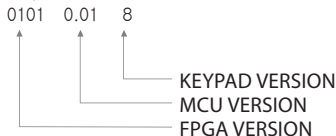
5. Menu Operations

[8] INFORM.



● Board Version

- Displays the current program version of the product.



● Input Channel

- Indicates the channel of the input signal.
- In the UD MODE(SDI-4CH/HDMI-4CH), press the ENTER button to change the input signal and the information of the signal will be displayed.
- In the SINGLE MODE, the signal information of the channel will be displayed.

● Input Config

- Displays the current input signal.

● SDI Payload ID

- Displays the values of the Byte 1,2,3,4.

● Video Standard

- Displays the standard of the Payload ID Byte 1.

● Sampling

- Displays the Sampling Structure information of the Payload ID Byte 3.

● Picture Rate

- Displays the Picture Rate of the Payload ID Byte 2.

● Scanning Method

- Displays the Interlace/Progressive information of the Payload ID Byte 2.

● Bit Depth

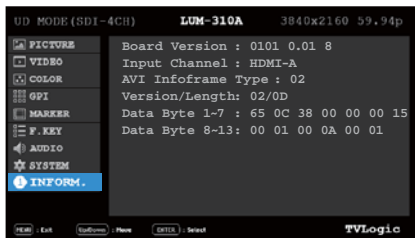
- Displays the Bit Depth information of the Payload ID Byte 4.

● Link Assignment

- Displays the Channel Assignment information of the Payload ID Byte 4.

5. Menu Operations

[9] INFORM.



- **Input Channel**
 - Indicates the channel of the input signal.
 - In the UD MODE(SDI-4CH/HDMI-4CH), press the ENTER button to change the input signal and the information of the signal will be displayed.
 - In the SINGLE MODE, the signal information of the channel will be displayed.
- **AVI Inframe Type**
 - Displays the type information of the AVI Inframe.
- **Version/Length**
 - Displays the version and data length of the AVI Inframe.
- **Data Byte 1~13**
 - Displays the information of the AVI Inframe.

6. Button Functions

[1] F1(MODE) Button

- **F1(MODE) settings are as followed.**

1. Press the F1/MODE button on the front of the monitor to change the MODE.
 - SDI : UD MODE(SDI-4CH), 2-SAMPLE INT(SDI-4CH), 2-SAMPLE INT(SDI-2CH), SINGLE MODE(SDI-A/B/C/D)
 - HDMI : UD MODE(HDMI-4CH), SINGLE MODE(HDMI-A/B)
- * 2-SAMPLE INTERLEAVE : The 2-SAMPLE INTERLEAVE mode displays the whole image with one input signal while the existing 4K signal which input with 4channels displays $\frac{1}{4}$ image with one input signal.

[2] SCAN Button

- **Apply after F2~F5 Key Mapping**
- **This product supports various scan modes.**
- **Press the SCAN button on the front of the monitor to activate different scan modes. Key mapping can be set in the OSD menu.**

1. Press the [SCAN] button continuously to activate various scan modes.
ZERO SCAN -> 1:1 SCAN -> Fit Width
2. The following represents the different types of scan mode. When a scan mode is selected, display skips the next mode if its required condition is not met.
 - Zero Scan : Zooms in/out of the image without changing the aspect ratio.
 - 1:1 Scan : 1:1 pixel mapping of the original image. This feature is available only when the size of the original image is bigger than the screen size.
 - Fit Width : Zooms in to fit the width of the original image to the width of the screen without changing the aspect ratio.

[3] ASPECT Button

- **When input signal mode is video signal, choose the aspect ratio below.**
 - * SDI : 16:9, 1.85:1, 2.35:1(HD)
 - * HDMI : 16:9, 1.85:1, 2.35:1(HD), 4:3, 16:9(480p,576p),

7. Video Support Resolution

Video Support Resolution

Input Signal Interfaces	Signal Format (HD-SDI / 3G SDI)	
HD-SDI Quad link (4K)	3840x2160 (23.98/24/25/29.97/30p/Psf)	YCbCr 4:2:2 10bit
	4096x2160 (23.98/24/25/29.97/30p/Psf)	

Input Signal Interfaces	Signal Format (HD-SDI / 3G SDI)	
3G-SDI Quad link(4K)	3840x2160(50/59.94/60p)	YCbCr 4:2:2 10bit
	3840x2160 (23.98/24/25/29.97/30p/Psf)	YCbCr 4:4:4 10/12bit RGB 4:4:4 10/12bit
	4096x2160 (47.95/48/50/59.94/60p)	YCbCr 4:2:2 10bit
	4096x2160 (23.98/24/25/29.97/30p/Psf)	YCbCr 4:4:4 10/12bit RGB 4:4:4 10/12bit
3G-SDI 2-Sample Interleave Dual link(4K)	3840x2160 (23.98/24/25/29.97/30p)	YCbCr 4:2:2 10bit
	4096x2160 (23.98/24/25/29.97/30p)	YCbCr 4:2:2 10bit
3G-SDI 2-Sample Interleave Quad link(4K)	3840x2160(50/59.94/60p)	YCbCr 4:2:2 10bit
	3840x2160 (23.98/24/25/29.97/30p)	YCbCr 4:4:4 10/12bit RGB 4:4:4 10/12bit
	4096x2160 (23.98/24/25/29.97/30p)	YCbCr 4:4:4 10/12bit RGB 4:4:4 10/12bit
	4096x2160 (47.95/48/50/59.94/60p)	YCbCr 4:2:2 10bit

7. Video Support Resolution

Video Support Resolution

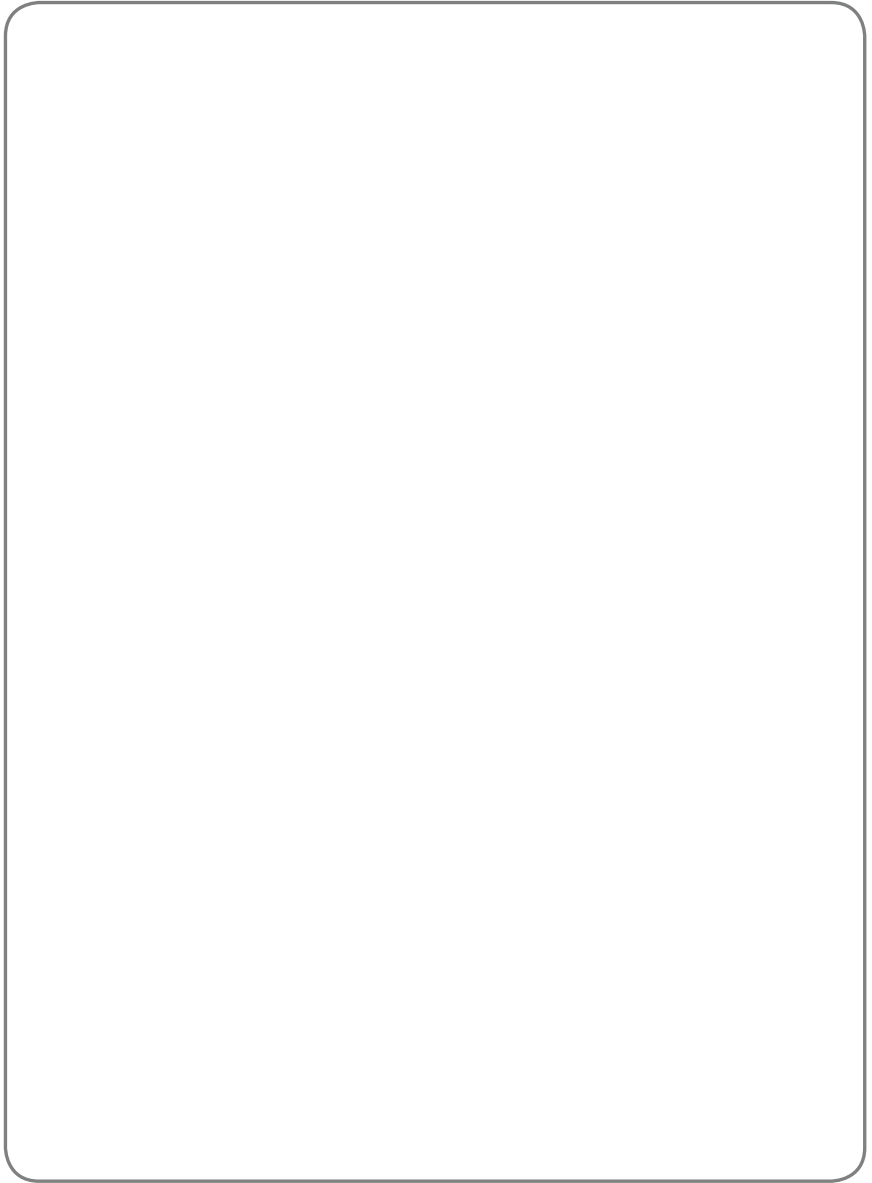
Input Signal Interfaces	Signal Format (HDMI)	
HDMI Quad link(4K)	3840x2160 (23.98/24/25/29.97/30/50/59.94/60p)	RGB 4:4:4 8/10/12bit YCbCr 4:4:4 8/10/12bit YCbCr 4:2:2 12bit
	720x480(60p) 720x576(50p) 1280x720(60p) 1920x1080(50/59.94/60p)	RGB 4:4:4 8/10/12bit YCbCr 4:4:4 8/10/12bit YCbCr 4:2:2 12bit
	800x600@60Hz 1024x768@60Hz 1280x1024@60Hz 1600x1200@60Hz	VESA
	3840x2160 (23.98/24/25/29.97/30p)	RGB 4:4:4 8bit YCbCr 4:4:4 8bit YCbCr 4:2:2 12bit
	4096x2160 (23.98/24p)	RGB 4:4:4 8bit YCbCr 4:4:4 8bit YCbCr 4:2:2 12bit

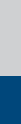
8. Product Specifications

		LUM-310A
LCD	Size	31"
	Resolution	4096 x 2160 (17:9)
	Pixel Pitch	0.1704(H) x 0.1704(W) mm
	Color Depth	1.07B colors (true 10bit)
	Viewing Angle	H : 178 degrees / V : 178 degrees
	Luminance of white	500 cd / m ²
	Contrast Ratio	1450:1
	Display Area	697.958(H) x 368.064 (V) mm
Input	4 x HDMI	HDMI A/B/C/D Input
	4 x BNC	3G-SDI A/B/C/D Channel Input
Output	4 x BNC	3G-SDI A/B/C/D Channel (Active Through Out)
Input Signal	3G-SDI	2.970Gb/s
	HD-SDI	1.485Gbps
	HDMI	480p/720p/1080p/2160P
SDI Input Signal Formats	SMPTE-425M-A/B	1080p (50/59.94/60)
	SMPTE-274M	1080i (50/59.94/60)
		1080p (23.98/24/25/29.97/30p/psF)
	SMPTE-296M	720p (60/59.94/50)
	SMPTE ST 2036-1:2009	3840x2160(23.98/24/25/29.97/30/50/59.94/60p)
SMPTE ST 2036-2:2011	2048x1080(23.98/24/25/29.97/30p/psf, 47.95/48/50/59.94/60p)	
Audio Out		Analog Stereo (Phone Jack)
Power		DC 24V / AC100~240V(50~60Hz)
Power Consumption (Approx.)		199 Watts(Max)
Operating Temperature		0°C to 40°C (32°F to 104°F)
Storage Temperature		-20°C to 50°C (-4°F to 140°F)
Main Body Dimensions (mm/inch)		759.8 X 448.5 X 146.3 (29.91 X 17.66 X 5.76)
Main Body Dimensions with stand (mm/inch)		759.8 X 501.5 X 255 (29.91 X 19.74 X 10.04)
Weight		24.8Kg/54.67lbs
Basic Accessories		AC Power cord, Stand
Optional Accessories		Carrying case

* The specification above may be changed without notice.

MEMO

A large, empty rectangular area with rounded corners, intended for writing a memo. The area is white and occupies most of the page below the header and above the footer.



TVlogic Always **ON-AIR**

FOR MORE INFORMATION PLEASE VISIT : <http://www.tvlogic.tv>
12F, ACE HIGH-END 8, 84 Gasan-digital 1-ro, Geumcheon-gu, Seoul, 18590, KOREA
TEL : +82-70-8668-6611, FAX : 82-2-6123-3201, E-mail : sales@tvlogic.co.kr