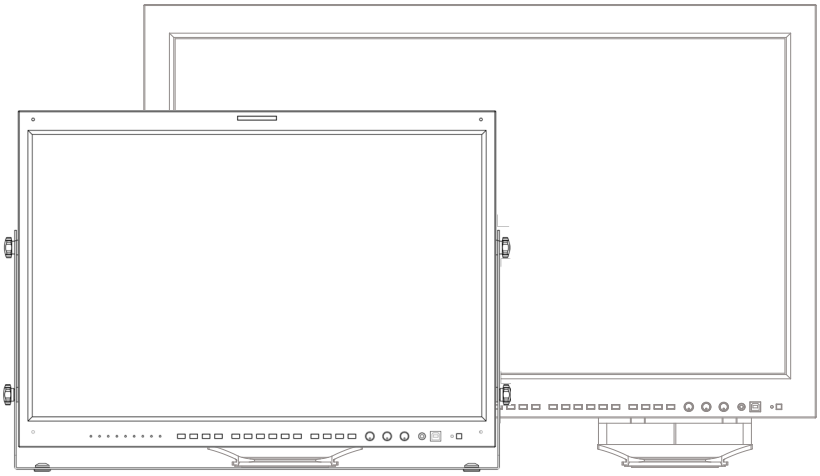


Multi Format Broadcast LCD Monitor

Operation Manual_v2.0

LVM-245W
LVM-327W

TVLogic Always ON-AIR

MULTI

Contents

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 interface 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**

- All operating instructions must be read and understood before the product is operated.
- These safety and operating instructions must be kept in a 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 the 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 repair 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 occur, unplug the power cord from the AC outlet, and request a qualified service person to perform repairs.
  a. When the power cord or plug in damaged.
  b. When 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 AC 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.
- 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

LVM-245W/327W Monitor contains the following features:

- **Compatible with varied SDI signals**
  - This product is compatible with various SDI Signals : 480i, 576i, 720p, 1080i, 1080p, 1080psF (SDI A, B 2 channels are compatible).

- **Compatible with varied Analog signals**
  - This product is compatible with various Analog signals - Composite, S-Video, Component, RGB and etc.

- **All-in-one type system**
  - Slim and all-in-one type monitor as it requires no additional accessories, for optimized space utilization.

- **Wide Screen compatible**
  - Wide Screen (Native 16:9) for easier monitoring conditions.

- **Remote Control Function**
  - This product can be remote controlled simply with cable connection without additional peripheral equipment attached to the unit.

- **DVI/HDMI(HDCP) function built-in**
  - DVI(Analog), DVI(Digital) and HDMI(HDCP) Inputs are available without the need of extra accessories.

- **RS-422/UMD feature support**
  - This product supports protocols provided by TVLogic or TSL.

- **RS-232 support**
  - Supports color-calibration through serial communication.

- **Ethernet & USB support**
  - Supports Ethernet and USB connection for program download and monitor control.

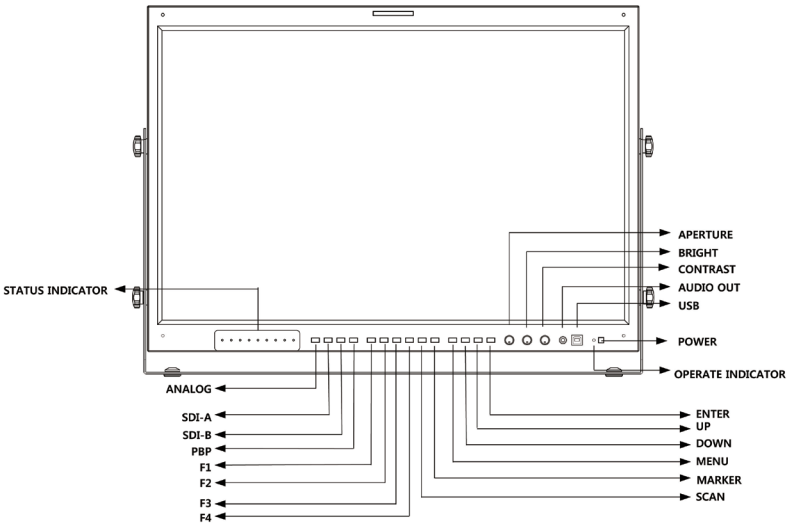
- **Dual Link support**
  - Supports Dual link YCbCr/RGB 4:4:4 and YCbCr 4:2:2 formats.

- **3G support**
  - Supports 3G A/B formats.

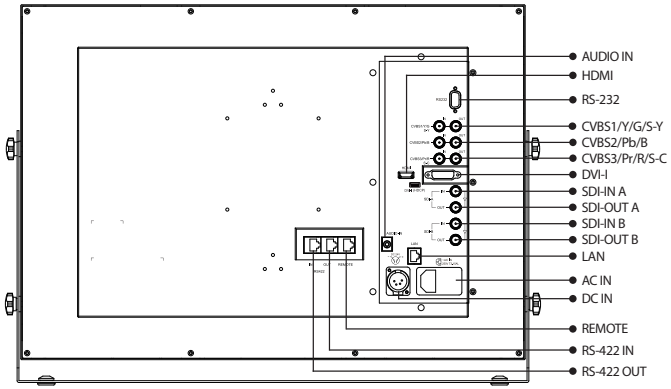
- **Additional features**
  - Wide Viewing Angle, Loop Through out(SDI), 1300:1 contrast ratio, 500cd/m^2, VESA Mounting Standard and User Interface.

3. Controls & Functions

LVM-245W : FRONT

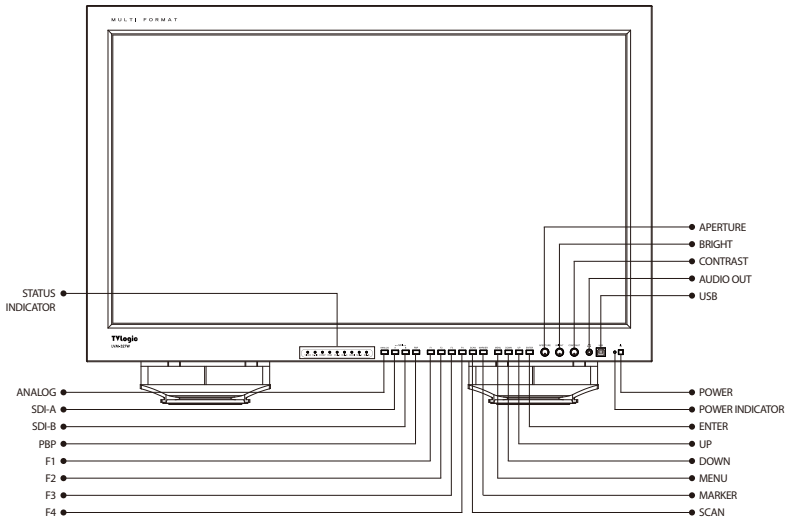


LVM-245W : REAR

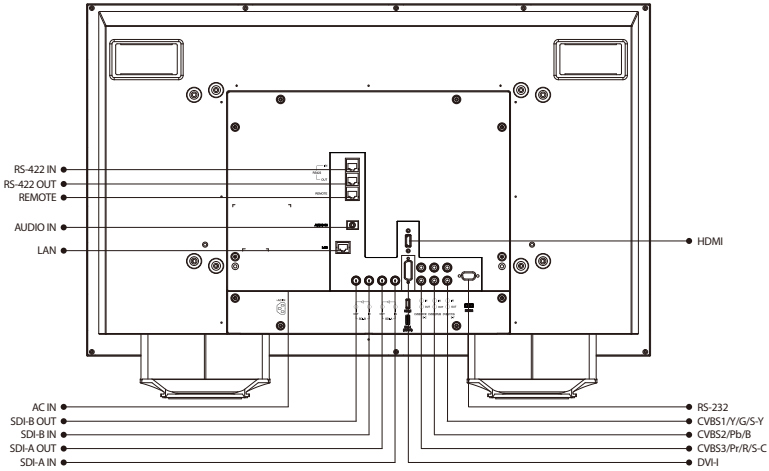


3. Controls & Functions

LVM-327W : FRONT



LVM-327W : REAR



3. Controls & Functions

FRONT

● **[STATUS INDICATOR] Lamp**
- Used to display the current input mode.
- Input Mode
  VIDEO : COMPOSITE 1/2/3
  S-VID : S-VIDEO
  COMP : COMPONENT
  RGB : RGB
  DVI-A : DVI ANALOG
  DVI-D : DVI DIGITAL
  HDMI : HDMI
  SDI-A : SDI-A
  SDI-B : SDI-B
- In PBP mode, each screen's input modes are displayed.
  Ex) When SDI-A input and COMPOSITE 1 input are selected for left screen and right screen respectively, SDI-A lamp and VIDEO lamp will light.

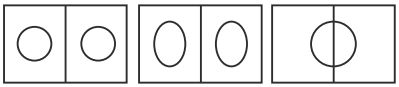
● **[ANALOG] Button/Lamp**
- Used to select the desired Analog input. Press the button to activate the analog input menu-selection, then use the [UP]/[DOWN] buttons to select desired input.

* See section "6. Other Functions [1]ANALOG" page for more information.

● **[SDI-A] Button/Lamp**
- Used when SDI-A INPUT is selected.

● **[SDI-B] Button/Lamp**
- Used when SDI-B INPUT is selected.

● **[PBP] Button/Lamp**
- Used to select PBP(Picture-by-Picture) function.
- Selects the order of operation: mode 1 -> mode 2 -> mode 3 in sequence.



* MODE 1 : Two images are displayed in the center of the monitor with maintain their screen ratio.
* MODE 2 : Two images are displayed with fill full in the monitor.
* MODE 3 : Left input signal displayed in the left hand side of the monitor, right input signal displays in the right hand side monitor with maintain their screen raitio.

● **[F1][F2][F3][F4] Button/Lamp**
- These functions buttons are used to activate the feature selected in "System- KEY FUNCTION 1/2/3/4 " menu.
- [F1] button is used to select a screen in PBP mode.

* See the "5. MENU Contents -> [9] SYSTEM Page" for more information.

● **[SCAN] Button/Lamp**
- Used to change the Scan mode. The mode is changed as the following sequence : OVER SCAN -> ZERO SCAN -> UNDER SCAN -> 2:1 SCAN -> 1:1 SCAN -> FIT WIDTH -> ZOOM(PBP 16:9 Mode)

* See the "6. Other Functions -> [4] SCAN" page for more information.

● **[MARKER] Button/Lamp**
- Used to activate or inactivate the marker. The desired aspect ratio can be displayed on the screen properly when the type of marker selected from the main menu.

3. Controls & Functions

FRONT

- **[MENU] Button/Lamp**
  - Used to activate the OSD menu.

- **[DOWN] Button/Lamp**
  - Used to move down though the menus during the OSD menu activation and also decrease the value of the selected feature.

- **[UP] Button/Lamp**
  - Used to move up though the menus during the OSD menu activation and also increase the value of the selected feature.

- **[ENTER] Button/Lamp**
  - Used to confirm a chosen value (or mode). It may also be used to control the VOLUME value during OSD menu inactivation.

- **[APERTURE] Knob**
  - Used to adjust the picture sharpness.
  - Control value range : 0 ~ 25
  - Unavailable in DVI ANALOG Mode.

- **[BRIGHT] Knob**
  - Used to adjust the degree of brightness.
  - Control value range : -100 ~ 100

- **[CONTRAST] Knob**
  - Used to adjust the contrast.
  - Control value range : -100 ~ 100

- **[AUDIO OUT] (PHONE JACK)**
  - Selects the Left/Right Audio disembedded signal output or HDMI input signal or external stereo signal is output through the internal speaker or the phone jack.

- **[USB]**
  - Ethernet and USB ports for monitor control, convenient to update the program for new function and debugging.

- **[STANDBY] Lamp**
  - It affords power supply, which may be indicated by indication lamp. The lamp is RED during power supply and GREEN during system is in operation. In case of power cut and sudden shut off of the power, our monitor keep previous setup stage.

- **[POWER] Button**
  - Used to turn power on and off.

- **[TALLY] Lamp**
  - Tally lamp that can be toggled in green or red using the REMOTE(RJ-45) port.

3. Controls & Functions

REAR

- **[RS422 IN/OUT] (RJ-45)**
  - Used to control the monitor with protocol provided by TVLogic or to support TSL protocol.

- **[REMOTE] (RJ-45)**
  - Provides connection to control equipment for external monitor control.

- **[RS-232]**
  - Factory program port used for automatic alignment.

- **[CVBS1/Y/G/S-Y] (BNC)**
  - Signal input terminal used to feed the monitor COMPOSITE 1, S-VIDEO Y, COMPONENT Y and RGB G signals.

- **[CVSBS2/Pb/B] (BNC)**
  - Signal input terminal used to feed the monitor COMPOSITE 2, RGB B and COMPONENT Pb signals.

- **[CVSBS3/Pr/R/S-C] (BNC)**
  - Signal input terminal used to feed the monitor COMPOSITE 3, S-VIDEO C, COMPONENT Pr and RGB R signals.

- **[HDMI(HDCP)] (HDMI)**
  - Signal input terminal for HDMI signal.

- **[DVI-I]**
  - Signal input terminal for DVI ANALOG or DVI DIGITAL signal.

- **[SDI-A IN] (BNC)**
  - HD/SD SDI signal input terminal for SDI A.

- **[SDI-A OUT] (BNC)**
  - HD/SD SDI signal output terminal for SDI A.

- **[SDI-B IN] (BNC)**
  - HD/SD SDI signal input terminal for SDI B.

- **[SDI-B OUT] (BNC)**
  - HD/SD SDI signal output terminal for SDI B.

- **[LAN]**
  - Ethernet port for easy firmware updates and remote control.

- **[AUDIO IN] (Phone Jack)**
  - External Audio in for Stereo Speaker out. [AC IN]
  - Used to supply AC power; 100V~240V input range.

- **AC IN**
  - 100~240V AC 50/60Hz

<Video input>
Video input connection method.

Connector	Composite	Component		S-Video
1	CVBS1	Y	G	Y
2	CVBS2	Pb	B	No Con.
3	CVBS3	Pr	R	C

<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 Construction

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

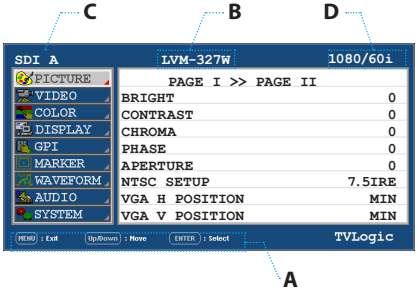
[2] Menu Control

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

[3] Menu Control Sequence

1. Press the [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 the [ENTER] button to select an item with UP/DOWN button.
4. Press the [ENTER] button to select the desired item. (The selected sub-menu will be highlighted.)
5. Press the [ENTER] button to save the new value after adjusting the value with the [UP]/ [DOWN] button.
6. Press the [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 the [ENTER] button at PAGE I >> PAGE II.

[4] Main Menu Window information



A. MENU, UP/DOWN, ENTER Button Status.
B. Model name(LVM-327W).
C. Current input signal.
D. Current input signal resolution.

4. Menu Tree & Adjustment

[5] MENU TREE

PICTURE	BRIGHT
	CONTRAST
	CHROMA
	PHASE
	APERTURE
	NTSC SETUP
	VGA H POSITION
	VGA V POSITION
	FOCUS ASSIST LEVEL
	FOCUS ASSIST COLOR
	USER ASPECT HORIZONTAL
	USER ASPECT VERTICAL
	NOISE REDUCTION
VIDEO	DITHERING
	FILTER
	FAST MODE
	FORCE psf
	FILM MODE DETECTION
	SDI FORMAT
	SDI SAMPLING
	3G FORMAT
	OUTPUT MODE SELECT
COLOR	COLOR TEMP
	GAIN RED
	GAIN GREEN
	GAIN BLUE
	BIAS RED
	BIAS GREEN
	BIAS BLUE
	BACK LIGHT
	COLOR SPACE
	GAMMA CURVE

DISPLAY	HD DISPLAY MODE
	TIME CODE ENABLE
	ORBITER CIRCUIT
	CLOSED CAPTION
	608 CAPTION SELECT
	708 SERVICE SELECT
	TELETEXT PAGE
	SCREEN SELECT
	BORDER COLOR
	BODER THICKNESS
GPI	GPI 1~GPI 8
	MONITOR ID
	UMD DISPLAY
	UMD CHARACTER
	D-UMD TALLY TYPE
	TALLY 1 COLOR / B0:0 B1:0
	TALLY 2 COLOR / B0:0 B1:0
	TALLY 3 COLOR / B0:0 B1:0
	TALLY 4 COLOR / B0:0 B1:0
	PASSWORD
	IP ADRESS
	SUBNET MASK
	GATEWAY
	PORT NO
	REMOTE CONTROL
	UMD CHRACTER COLOR
	UMD BG.TRANS

4. Menu Tree & Adjustment

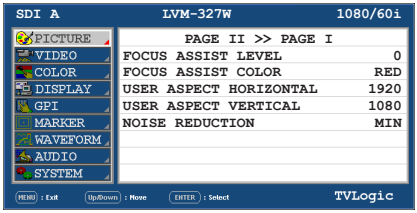
[5] MENU TREE

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
WAVEFORM	WAVEFORM/VECTOR
	WAVEFORM INTENSITY
	WAVEFORM TRANS
	VECTOR GAIN X 4
	LINE WAVEFORM ENABLE
	LINE POSITION SELECT
	LINE POSITION DRAW
	WAVEFORM COLOR
	RANGE ERROR
	Y MAX
	Y MIN
	C MAX
	C MIN
	Y PICTURE BLINK
	C PICTURE BLINK

AUDIO	LEVEL METER REFERENCE
	LEVEL METER DECAY TIME
	LEVEL METER SIZE
	LEVEL METER POSITION
	VOLUME
	Em. AUDIO RIGHT
	Em. AUDIO LEFT
SYSTEM	USER CONFIG SET
	LOCK NUMBER
	LOCK ENABLE
	OSD DISPLAY
	OSD POSITION
	INTERNAL PATTERN
	SET DEFAULT
	SIGNAL LOCK
	KEY LED
	KEY FUNCTION 1~4
	KEY LOCK
	INFORMATION

5. Menu Operations

[1] PICTURE



- **BRIGHT**
  - Used to set the brightness level from -100 to 100.

- **CONTRAST**
  - Used to set the contrast level from -100 to 100.

- **CHROMA**
  - Used to set the saturation level from -50 to 50.

- **PHASE**
  - Used to set the phase(hue) level from -50 to 50.
  - Only available in COMPOSITE 1/2/3 and S-VIDEO modes.
  - Phase control in DVI ANALOG mode is between MIN(0) and MAX(63).

- **APERTURE**
  - Used to set the picture sharpness level from 0 to 25.

- **NTSC SETUP**
  - Used to set the black level of NTSC video as 0(zero setup) or 7.5 IRE.
  - Activates when NTSC video signal is input through COMPOSITE 1/2/3 or S-VIDEO terminal.

- **VGA H POSITION**
  - Used to set the VGA H position from -15 to 15.
  - Only Available in DVI Analog mode.

- **VGA V POSITION**
  - Used to set the VGA V position from -10 to 10.
  - Only Available in DVI Analog mode.

- **FOCUS ASSIST LEVEL**
  - Used to set the edge difference value between the edges in an image.
  - Available values are from 0 to 100. Larger value means more sophisticated detail detection.
  - Designated color is displayed when the difference of the edges exceeds the previously set value.
  - This features is available only when the FOCUS ASSIST mode is selected.

- **FOCUS ASSIST COLOR**
  - Used to select the color of FOCUS ASSIST.
  - Available options are RED, GREEN, BLUE and USER.

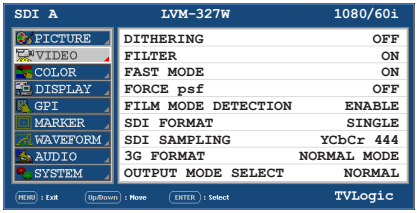
- **USER ASPECT HORIZONTAL**
  - Used to set the Horizontal size of the screen. Activates only when the Scan mode is set to USER ASPECT.
  - Value Range : 1280~ 1920

- **USER ASPECT VERTICAL**
  - Used to set the Vertical size of the screen.
  - Activates only when the Scan mode is set to USER ASPECT.
  - Value Range : 720 ~ 1080

- **NOISE REDUCTION**
  - Configures a 3D-Noise Reduction filter.
  - Adjustment range is from 0 to 10
  - Turns off 3D-Noise Reduction Filter when the value is “0”.

5. Menu Operations

[2] VIDEO



- **DITHERING**
  - This item toggles Dithering ON/OFF.

- **FILTER**
  - This item toggles the 4:4:4 video processing filter ON/OFF for smoother transition between colors.

- **FAST MODE**
  - Used to minimizes the de-interlacing processing time delay and improves the quality of fast moving and fine details under interlaced format.
  - Since the function of this feature is to minimize the de-interlacing dealy, it will not be effective under progressive format.
  - Feature bypasses deinterlacer, playing back 2 full fields per frame. Also reduces signal processing delay for reduced audio/video delay.

- **FORCE psf**
  - Used to forces the psf mode for psf signals, overriding the automatic psf detection.
  - If this feature is turned off, the unit checks for the psf signal first, then searches for the remaining modes.

- **FILM MODE DETECTION**
  - This item toggles Film Mode ON/OFF.

- **SDI FORMAT**
  - Used to select the SDI input format between Single link and Dual link.

- **SDI SAMPLING**
  - Used to select input SDI sampling mode in Dual link.
  - Available modes are YCbCr 4:4:4, RGB 4:4:4 and YCbCr 4:2:2 P.

- **3G FORMAT**
  - Used to select input format of 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.

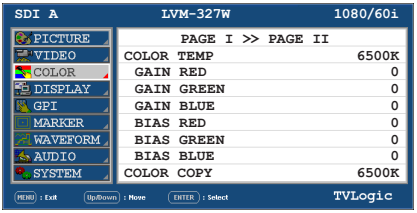
- **OUTPUT MODE SELECT**
  - Used to select the luminance range in SDI MODE between FULL(255) and NORMAL(235).

- **RGB INPUT MODE**
  - Used to select luminance value between RGB255 and RGB235. Available only in DVI-DIGITAL and HDMI modes.
  - * RGB 255 : Input : 0 ~ 255, Output : 0 ~ 255
  - * RGB 235Ex : Input : 16 ~ 235, Output : 0 ~ 255
  - * RGB 235 : Input : 16 ~ 235, Output : 16 ~ 235
  - Only available in DVI DIGITAL and HDMI Modes.

- **INPUT FORMAT SELECT**
  - Used to select input format between RGB and YPbPr.
  - Available only in DVI Digital and HDMI modes.

5. Menu Operations

[3] COLOR



- **COLOR TEMP**
  - Used to control the Color Temperature and allow instant access to preset color temperature settings.
  - Available values are 3200K, 5000K, 5600K, 6500K, 9300K and CUSTOM 1/2/3.
  - In CUSTOM1/2/3 modes, user can define custom RGB GAIN and BIAS values.
  - Backlight value is adjustable for each color temperature.

- **GAIN RED**
  - Used to control the RED color.
  - The value is selectable between Min(-256) and MAX(255).
  - Adjusts red color of bright sections.
  - Only available in CUSTOM 1/2/3 modes.

- **GAIN GREEN**
  - Used to control the GREEN color.
  - The value is selectable between Min(-256) and MAX(255).
  - Adjusts green color of bright sections.
  - Only available in CUSTOM 1/2/3 modes.

- **GAIN BLUE**
  - Used to control the BLUE color.
  - The value is selectable between Min(-256) and MAX(255).
  - Adjusts blue color of bright section.
  - Only available in CUSTOM 1/2/3 modes.

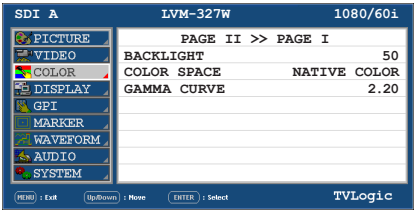
- **BIAS RED**
  - Used to adjust the black level to control RED color.
  - The value is selectable between Min(-100) and MAX(100).
  - Adjusts RED color of dark sections.
  - Only available in CUSTOM 1/2/3 modes.

- **BIAS GREEN**
  - Used to adjust the black level to control GREEN color.
  - The value is selectable between Min(-100) and MAX(100).
  - Adjusts green color of dark sections.
  - Only available in CUSTOM 1/2/3 modes.

- **BIAS BLUE**
  - Used to adjust the black level to control BLUE color.
  - The value is selectable between Min(-100) and MAX(100).
  - Adjusts blue color of dark sections.
  - Only available in CUSTOM 1/2/3 modes.

- **COLOR COPY**
  - Used to copy the R/G/B Gain value of pre-stored color temperature settings.
  - In CUSTOM mode, find and select the color temperature to be used by using the [UP]/[DOWN] buttons 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 modes.

[3] COLOR



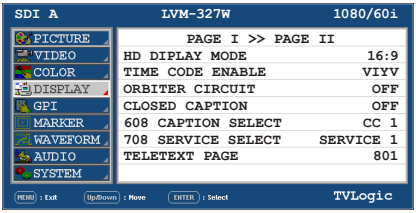
- **BACK LIGHT**
  - Used to control the LCD Panel's brightness.
  - Available values are from 0 to 100.

- **COLOR SPACE**
  - Used to select the Color Space.
  - Available modes are NATIVE COLOR, REC-709(sRGB), LUT SMPTE-C and LUT EBU.

- **GAMMA CURVE**
  - Used to change the Gamma Curve from 1.0 to 3.0.
  - Available values are from 1.0 to 3.0.

5. Menu Operations

[4] DISPLAY



- **HD DISPLAY MODE**
  - Used to control the display ratio of HD mode. Available values are 16:9, 1.85:1 and 2.35:1.

- **TIME CODE ENABLE**
  - Used to display the Time Code.
  - Available modes are VITC, LTC and OFF.

- **ORBITER CIRCUIT**
  - Used to prevent image sticking effect on LCD Panels when signal input is used. The user may decide number of pixels to move.
  - The number of pixels should be within range between MIN(0) and MAX(100). Moving speed is 10 minutes per one pixel line.

- **CLOSED CAPTION**
  - Used to select Closed Caption.
  - Available modes are OFF, 708, 608(LINE21), 608(ANC) OP47.

  * 608 : CEA-608-B, 708 : CEA-708-C standard display only

- **608 CAPTION SELECT**
  - Used to select the Closed Caption 608 channel.
  - Supports CC1~CC4.

- **708 SERVICE SELECT**
  - Used to select the Closed Caption 708 service.
  - Supports SERVICE 1~SERVICE 6.

- **TELETEXT PAGE**
  - Used to set the OP47/42 page.
  - Available modes are from 801 to 8FF.

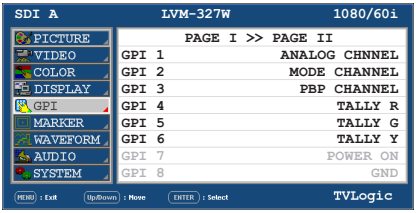
- **SCREEN SELECT**
  - Used to control the individual screens(1 or 2) or full screen (both) in PBP Mode.
  - Screen selection order: ALL SCREEN -> SCREEN 1 -> SCREEN 2
  - For easy screen selection, use [F1] button in the front panel.

- **BORDER COLOR**
  - Used to select the border line color between the screens in PBP Mode.
  - Available values are WHITE, GRAY, BLACK, RED, GREEN and BLUE.

- **BORDER THICKNESS**
  - Used to select the thickness of the border lines the screens in PBP Mode.
  - Set value range in pixel 0 ~ 7.

5. Menu Operations

[5] GPI



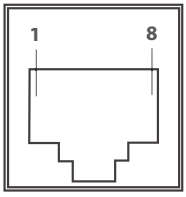
- **This product provides a REMOTE CONTROL mode. The user may connect RJ-45 jack to the REMOTE terminal on the rear of the unit and designate a function for each pin.**

- **The default settings are as follows:**
  PIN 1 : ANALOG CHANNEL
  PIN 2 : MODE CHANNEL
  PIN 3 : PBP CHANNEL
  PIN 4 : TALLY R
  PIN 5 : TALLY G
  PIN 6 : TALLY Y
  PIN 7 is POWER ON/OFF use only, PIN 8 is GND

- **The pin positions are as follows :**

REMOTE (RJ-45)

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

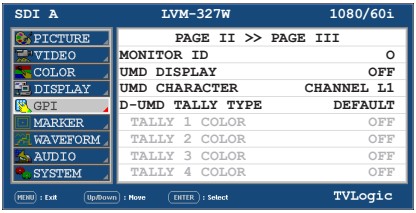


- **Selectable functions are as follows :**

Menu Classification	Settable Values
PIN 1~6	NONE, ANALOG CHANNEL, SDI A CHANNEL, SDI B CHANNEL, PBP CHANNEL, TALLY R, TALLY G, TALLY Y, 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%, SAFETY AREA 85%, SAFETY AREA 88%, SAFETY AREA 90%, SAFETY AREA 93%, SAFETY AREA 100%, 708, 608(LINE 21), 608(ANC), DYNAMIC-UMD, COMPOSITE 1, COMPOSITE 2, COMPOSITE 3, S-VIDEO, COMPONENT, RGB, DVI-ANALOG, DVI-DIGITAL, HDMI, OP47, OP42, OP47/42(AUTO), 708-KOR, TELETEXT PAGE 801, TELETEXT PAGE 888, TELETEXT PAGE 889
PIN 7	POWER ON/OFF CONTROL
PIN 8	GND

5. Menu Operations

[5] GPI



● **MONITOR ID**
- Used to set the ID of each monitor for the TVLogic control protocol or DYNAMIC UMD using RS-422 communication.
- Available values are between 0,1,2 ~ 124.
- Right screen in PBP mode is automatically set to +1 of the monitor ID.

● **UMD DISPLAY (Under Monitor Display)**
- Used to set input source ID mode.
- Available modes are OFF, UMD, ANC, D-UMD (S-8C), D-UMD(S-16C) and D-UMD(D-8C).
- If the UMD menu is selected, characters or tally data in the black bar displays on the bottom of the screen. The vertical aspect ratio of the image changes on the screen as the bar appears at the bottom of screen.
- In the USER ASPECT mode, the UMD bar displays semi-transparently and the screen keeps its USER ASPECT ratio.

* UMD : Displays user customized 8 characters on screen.
* ANC : Displays characters embedded in SDI signal.
* D-UMD(S-8C) : Displays incoming data of 8 characters and tally signal from TSL protocol (V3.1).
* D-UMD(S-16C) : Displays incoming data of 16 characters and tally signal from TSL protocol (V3.1).
* D-UMD(D-8C) : Displays incoming data of two pairs of 8 character strings and tally signals from TSL protocol (V3.1).

- In PBP mode, even if D-UMD(S16C), D-UMD (D-8C) and D-UMD(S-8C) are selected, only D-UMD (S-8C) activates.
- In PBP mode, each D-UMD(S-8C) for left screen and right screen are activated. Adjustments for each setting are available.

● **UMD CHARACTER**
- Used to customize the characters for UMD.
- Alphabets, numbers and special symbols are available. (Max. 8 characters)

● **D-UMD TALLY TYPE**
- Tally type configuration setting in D-UMD(D-8C), UMD Display.
- Configuration values are DEFAULT, USER COLOR, CHARACTER, BG .COLOR, USER TALLY, USER CHAR and USER BG.

* DEFAULT : Existing TV Logic operating system (VRT)
* USER COLOR : User configuration settings on each TALLY color type.

- TALLY1 COLOR ~ TALLY4 COLOR are activated when USER COLOR is selected.
- CHARACTER : Tally displays with the character color. Activates the same as Default model.
- BG. COLOR : Tally is displayed as the background of character. Activate the same as Default mode.
- USER TALLY : The bit0 & bit 1 of TSL Protocol Control Byte receives the input signal and displays Tally by user's set (OFF, WHITE, RED, GREEN, BLUE, YELLOW CYAN, MAGENTA)
- USER CHAR : This function activates in the same way as USER TALLY and TALLY is displayed by the character color.
- USER BG. : This function activates in the same way as USER TALLY and Tally is displayed in the background of the character.

● **TALLY1 COLOR ~ TALLY4 COLOR**
- This item sets the color of each TALLY1, TALLY2, TALLY3 and TALLY4 .
- Available color settings are Red, Green and Yellow.

● **B0:0 B1:0 ~ B0:1 B0:1**
- The Byte0, Byte1 of TSL Protocol Control Byte sets the color of the input conditions.
- Available colors are OFF, WHITE, RED, GREEN, BLUE, YELLOW, CYAN and MAGENTA.

[5] GPI

<Dynamic UMD Protocol (TSL V3.1)>

* Transmission (18 Byte) (PC or Device -> Monitor)

HEADER (1 BYTE)	CONTROL BYTE(1 BYTE)	DISPLAY DATA (16 BYTE)

* **[HEADER]** : Display address (0~126) + 80 hex.
* **[CONTROL BYTE]**
  - **bit 0 : Tally 1 (1=on, 0=off)**
  - **bit 1 : Tally 2 (1=on, 0=off)**
  - **bit 2 : Tally 3 (1=on, 0=off)**
  - **bit 3 : Tally 4 (1=on, 0=off)**
  - bit 4 : bright data (Not used)
  - bit 5 : bright data (Not used)
  - bit 6 : reserved (Not used)
  - bit 7 : cleared to 0 (Not used)

* **[DISPLAY DATA]** : 16 displayable ASCII characters.

[5] GPI

● **Tally Type - Default**

- S-8C(Single 8 Character) & S-16C(Single 16 Character)

Bit 1 (Tally2)	Bit 1 (Tally1)	Operation
0	0	CHANNEL1
0	1	CHANNEL1
1	0	CHANNEL1
1	1	CHANNEL1

- D-8C(Dual 8 Character)

Bit 1 (Tally4)	Bit 1 (Tally3)	Operation
0	0	CHANNEL1
0	1	CHANNEL1
1	0	CHANNEL1
1	1	CHANNEL1

● **D-UMD TALLY TPYE – USER COLOR**

- Color selections between TALLY1 ~ TALLY4.

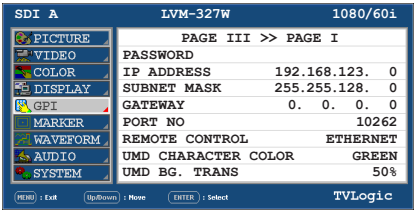
The following appearance of UMD DISPLAY is set as D-UMD(D-8C), D-UMD TALLY TYPE and TALLY1 ~ TALLY4 COLOR.

D-UMD TALLY TYPE	USER COLOR
TALLY1 COLOR	RED
TALLY2 COLOR	GREEN
TALLY3 COLOR	RED
TALLY4 COLOR	YELLOW

CHANNEL1 CHANNEL1

5. Menu Operations

[5] GPI



- **PASSWORD**
  - Used to set password for download the program via Ethernet. The password set for the monitor must match with the password for the download program.

- **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 connected to a Monitor.

- **PORT NO**
  - Used to set the port number. Default port number is 10262.

- **REMOTE CONTROL**
  - Used to set the port for Remote Control. (ETHERNET, RS-422)

- **UMD CHARACTER COLOR**
  - Sets the character color of UMD. (WHITE, RED, GREEN, BLUE, YELLOW, CYAN, MAGENTA)
  - This function only activates when D-UMD TALLY TYPE is set DEFAULT, USER COLOR, BG. COLOR, USER TALLY, USER BG modes.

- **UMD BG. TRANS**
  - Used to set the transparency of the UMD background.
  - Available values are SCALE DOWN, OPAQUE, 50%, 90% and 100%.
  - SCALE DOWN function reduces images and areas of the UMD to avoid overlapping. (Only activates when the UMD is overapped with images.)

[6] MARKER

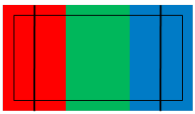
● **MARKER**
- Used to select the marker type when the MARKER is displayed on the screen.
- Marker may only be activated by pressing the [MARKER] button on the front of the monitor.
- Available marker types are OFF, 16:9, 4:3, 4:3 ON AIR, 15:9, 14:9, 13:9, 1.85:1, 2.35:1, 1.85:1 & 4:3, 4:3 ALT 14:9, 6:9 ALT 14:9, 16:9 ALT 4:3, AFD and USER.

* AFD (Active Format Description) : If this mode is selected, the embedded Aspect ratio signal in the video signal will be extracted and displayed as a marker.

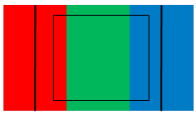
● **CENTER MARKER**
- Used to display the CENTER MARKER on the screen.
- This function operates only after activating the MARKER function by pressing the [MARKER] button on the front of the monitor.

● **SAFETY AREA**
- Used to select to display and control the size of the SAFETY AREA.
- Available types 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 the FIT MARKER function.
- With FIT MARKER "ON", the safety area is displayed relative to the marker in use. With FIT MARKER "OFF", the safety area is displayed relative to the incoming source.
- FIT MARKER ON/OFF displays as shown below.



● MARKER : 4:3
● SAFETY AREA : 90%
● FIT MARKER : OFF



● MARKER : 4:3
● SAFETY AREA : 90%
● FIT MARKER : ON

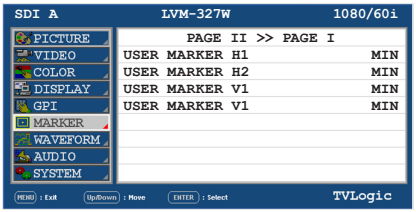
● **MARKER MAT**
- This item darkens the area of the outside of MARKER setting area. The degree of darkness is between OFF(Transparency) and 7(Black). - The higher the number, the darker MARKER border becomes.

● **MARKER COLOR**
- Used to control the color of MARKER lines.
- Available colors are WHITE, GRAY, BLACK, RED, 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

[6] MARKER



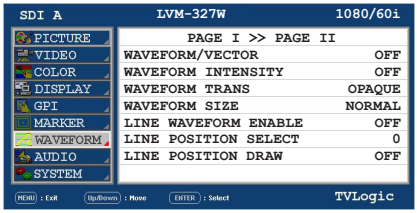
- **USER MARKER H1**
  - Used to control the position of the first user defined horizontal marker line.
  - Marker option USER needs to be selected.

- **USER MARKER H2**
  - Used to control the position of the second user defined horizontal marker line.
  - Marker option USER needs to be selected.

- **USER MARKER V1**
  - Used to control the position of the first user defined vertical marker line.
  - Marker option USER needs to be selected.

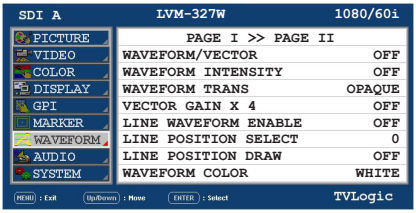
- **USER MARKER V2**
  - Used to control the position of the second user defined vertical marker line.
  - Marker option USER needs to be selected.

[7] WAVEFORM

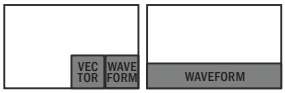


- **WAVEFORM/VECTOR**
  - This function sets the WAVEFORM and VECTORSCOPE.
  - This feature is available in SDI, COMPOSITE 1/2/3, S-VIDEO and COMPONENT modes.
  - Activates in the order :
  * Normal mode : OFF-> WAVEFORM-> VECTOR-> YCbCr-> RGB-> WAVEFORM + VECTOR-> WIDE-Y.
  * PBP mode : OFF-> WAVEFORM-> VECTOR-> ->WIDE-Y.
  - Displays on the bottom right of the screen and moves above the UMD, if UMD feature is selected.
  * WAVEFORM : Displays the shape and form of luminance level of a signal.
  * VECTOR : Displays the color components B-Y and R-Y of the input signals on the XY axis. HD and SD inputs are classified into two kinds, depending on the input. 100% and 75% scales indicated on a display.
  * YCbCr : Displays each waveform for elements of the luminance and Cb/Cr of the input s ignal.
  * R/G/B : Displays each waveform for elements of the green, red and blue of the input signal.
  * WAVEFORM + VECTOR : Displays waveform and vector scope simultaneously.
  * WIDE-Y : Stretches the waveform to fit the width of the screen.
  - When the input signal format is RGB 444, only the RGB mode activates.

[7] WAVEFORM



<WAVEFORM> <VECTOR> <YCbCr/RGB>



<WAVEFORM + VECTOR> <WIDE-Y>

● **WAVEFORM INTENSITY**
- Used to control the brightness of the WAVEFORM/VECTOR display.
- Available values are between 0 ~ 30. The higher the number the brighter the Waveform will be.

● **WAVEFORM TRANS**
- Used to control the transparency level of the WAVEFORM/VECTOR.
- Available modes are OPAQUE and TRANS.
- If the main OSD overlaps with the WAVEFORM/VECTOR when the option is set to OPQGUE, it will automatically display it as transparent and change back to OPAQUE when the main OSD disappears.

● **VECTOR GAIN X 4**
- This item magnifies the precision of VECTORSCOPE four times size based on the center of the vectorscope.

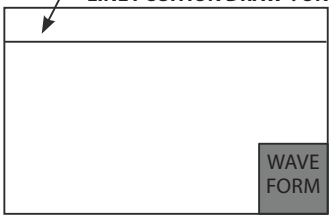
● **LINE WAVEFORM ENABLE**
- This item is utilized to display the entire data or one line data on the waveform.

● **LINE POSITION SELECT**
- In the WAVEFORM/VECTOR, use the [Up]/ [Down] button to select User's desired line.

● **LINE POSITION DRAW**
- ON/OFF the line indication for line select feature.
- Activates only when the LINE SELECT ENABLE feature is enabled.
- When this item is set to OFF, the Line Waveform still displays if LINE WAVEFORM is enabled.

Position changes if the value changes in LINE SELECT option and the waveform of the selected position displays.

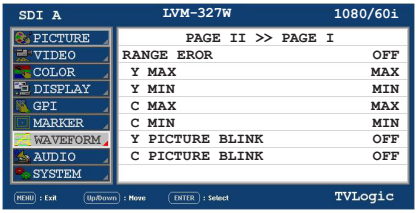
WAVEFORM/VECTOR : WAVEFORM
LINE POSITION SELECT : ON
LINE POSITION DRAW : ON



● **WAVEFORM COLOR**
- This item selects the color of WAVOFORM/ VECTOR.
- Available options are WHITE and GREEN.

5. Menu Operations

[7] WAVEFORM



● **RANGE ERROR**
- Used to display the values of Y MAX, Y MIN, C MAX, C MIN, Y PICTURE BLINK and C PICTURE BLINK on the screen.
- Selected values in Y MAX, Y MIN, C MAX, C MIN are indicated in WAVEFORM/VECTOR or Y/Cb/Cr.
- If Y PICTURE BLINK or C PICTURE BLINK is enabled, the section of image that exceeds the selected values of Y MAX, Y MIN, C MAX and C MIN blinks.

* In th case of RGB input, Range Error is not supported

● **Y MAX**
- Used to set the maximum luminance level.
- Available values are between 1 ~ 1020.
- Exceeded selection displays on the top portion of the Waveform or display.

● **Y MIN**
- Used to set the minimum luminance level.
- Available values are between 1~ 1020.
- Exceeded selection displays on the top portion of the Waveform or display.

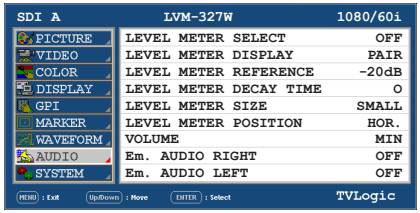
● **C MAX**
- Used to set the maximum chroma level.
- Available values are between 1 ~ 1020.
- Exceeded selection displays on the top portion of the Waveform or display.

● **C MIN**
- Used to set the minimum chroma level.
- Available values are between 1 ~ 1020.
- Exceeded selection displays on the top portion of the Waveform or display.

● **Y PICTURE BLINK**
- Used to set selections of image that exceeds Y MAX and Y MIN to blink.

● **C PICTURE BLINK**
- Used to set selections of image that exceeds C MAX and C MIN to blink.

[8] AUDIO



● **LEVEL METER SELECT**
- Used to control the Embedded Audio Level Meters.
- Available modes are OFF, G1+G2, G2+G3, G3+G4, G1+G3, G1+G4, G2+G4 and 16CH.
- If Main Menu window activates, the level meter displays semi-transparent even if the [LEVEL METER SIZE] menu is set to NORMAL. It returns to normal when the Main Menu window is deactivated.

● **LEVEL METER DISPLAY**
- Used to control display method of Audio Level Meters.
- Available modes are PAIR and GROUP.

● **LEVEL METER REFERENCE**
- Used to set Audio Level Meter default.
- Available values are -18dB and -20dB.
- Audio within selected value is displayed in green and exceeded audio level is displayed in yellow.
- Audio exceeding -4dB is displayed in red.

● **LEVEL METER DECAY TIME**
- Used to set the reduction time of the maximum indication of audio signals.
- Available values are form 0 to 30. Larger values indicate a longer time to display.

● **LEVEL METER SIZE**
- Used to control the size of the Audio Level Meters.
- Available modes are SMALL, SMALL TRANS, NORMAL, NORMAL TRANS, LARGE and LARGE TRANS.
- In SMALL, NORMAL and LARGE modes, the Audio Level Meter appears opaque.
- In SMALL TRANS., NORMAL TRANS and LARGE TRANS modes, the Audio Level Meter appears semitransparent.

● **LEVEL METER POSITION**
- Used to control the position of the Audio Level Meters.
- Available modes are HOR., VER. and BOT..

*16 CH(HOR.): Displays each 8 channel audio level meter horizontally on the top left and right.

*16 CH(VER.) : Displays each 8 channel Audio Level Meter vertically on the center left and right.

*16 CH(BOT.) : Displays each 8 channel Audio Level Meter vertically on the bottom left and right.

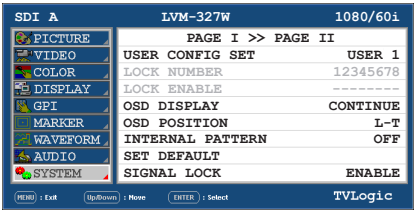
● **VOLUME**
- Used to control the embedded audio output volume for the internal speakers of the monitor.
- Available values are between 0 ~ 30.

● **Em. AUDIO RIGHT**
- Used to control embedded audio channel for right audio out internal speaker of the monitor.
- In HDMI mode, HDMI audio output.
- In COMPOSITE, S-VIDEO, COMPONENT, RGB, DVI ANALOG and DVI DIGITAL modes, the audio signal that is connected with the [AUDIO IN] terminal input on the back of the monitor output.
- Available values are OFF and CH 1 ~ CH 16.

● **Em. AUDIO LEFT**
- Used to control embedded audio channel for left audio out of internal speaker and [AUDIO OUT] in the back of the monitor.
- In HDMI mode, HDMI audio output.
- In COMPOSITE, S-VIDEO, COMPONENT, RGB, DVI ANALOG and DVI DIGITAL modes, the audio signal that is connected with the [AUDIO IN] terminal input on the back of the monitor output.
- Available values are OFF, CH 1 ~ CH 16 and Ext.

5. Menu Operations

[9] SYSTEM



● **USER CONFIG SET**
- Used to save and apply three kinds of user configuration.
- Available modes are USER1, USER2 and USER3.
- Effective items for each USER1, USER2 and USER3 settings are the [MARKER] menu of MARKER, CENTER MARKER, SAFETY AREA, MARKER MAT and MARKER COLOR and the [PICTURE] menu of , BRIGHT, CONTRAST, CHROMA, PHASE, APERTURE and NOISE REDUCTION.

● **LOCK NUMBER**
- Factory uses only.

● **LOCK ENABLE**
- Factory uses only.

● **OSD DISPLAY**
- Controls the OSD display time.
- Available values are 4~20SEC, CONTINUE, 3 SEC, MAIN MENU 20 SEC, MAIN MENU CONTINUE and MAIN MENU 3 SEC.

* MAIN MENU 20 SEC : The main OSD menu will be disappeared after 20 seconds and the other information windows are disappeared

* MAIN MENU CONTINUE : The main OSD menu will not be disappeared and the other information windows are disappeared after 2 seconds.

* MAIN MENU 3 SEC : The main OSD menu will be disappeared after 3 seconds and the other information windows are disappeared after 2 seconds.

● **OSD POSITION**
- Controls the OSD position.
- Available positions are CENTER, Right-Top (R-T), Right-Bottom(R-B), Left-Bottom(L-B) and Left-Top(L-T).

● **INTERNAL PATTERN**
- This item generates internal white pattern.
- The white level select between 0% and 100% (Per 5% increase or decrease)

● **SET DEFAULT**
- User can use SET DEFAULT menu to initialize to factory setting.
- Set default items are BRIGHT, CONTRAST, CHROMA, PHASE and APERTURE and NOISE REDUCTION set 0.

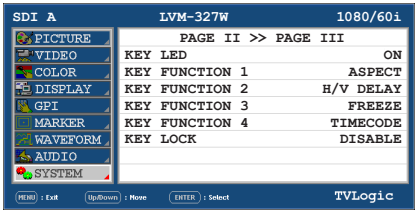
● **SIGNAL LOCK**
- Signal Lock selects the video output by using input signal synchronization.

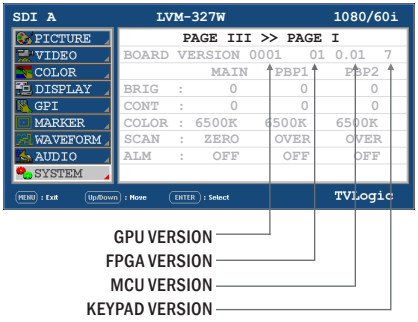
* ENABLE : This function outputs the video using input signal synchronization.

* DISABLE : This function outputs the video using self-created synchronization.
- When the input signal or input format are changed, the monitor will response quickly.

5. Menu Operations

[9] SYSTEM





● **KEY LED**
- This item controls KEY LED ON/OFF.
- If the button with LED is pressed with the KEY LED Off, LED comes on but goes off after 5 seconds.

● **KEY FUNCTION 1**
- User can select the function for [F1] button.
- Selectable Items : ASPECT, H/V DELAY, FREEZE, WAVEFORM SEL., W/F ON/OFF, TIMECODE, CC SEL, ALM SEL., OUTPUT MODE, DITHERING, FILTER,FORCE Psf, UMD, COLOR TEMP, BLUE ONLY, PAGE 801, PAGE 888 and PAGE 889.

* [F1] button is used to select a SCREEN SEL in PBP mode.

● **KEY FUNCTION 2**
- User can select the function for [F2] button.
- Selectable Items : ASPECT, H/V DELAY, FREEZE, WAVEFORM SEL., W/F ON/OFF, TIMECODE, CC SEL, ALM SEL., OUTPUT MODE, DITHERING, FILTER,FORCE Psf, UMD, COLOR TEMP, BLUE ONLY, PAGE 801, PAGE 888 and PAGE 889.

● **KEY FUNCTION 3**
- User can select the function for [F3] button.
- Selectable Items : ASPECT, H/V DELAY, FREEZE, WAVEFORM SEL., W/F ON/OFF, TIMECODE, CC SEL, ALM SEL., OUTPUT MODE, DITHERING, FILTER,FORCE Psf, UMD, COLOR TEMP, BLUE ONLY, PAGE 801, PAGE 888 and PAGE 889.

● **KEY FUNCTION 4**
- User can select the function for [F4] button.
- Selectable Items : ASPECT, H/V DELAY, FREEZE, WAVEFORM SEL., W/F ON/OFF, TIMECODE, CC SEL, ALM SEL., OUTPUT MODE, DITHERING, FILTER,FORCE Psf, UMD, COLOR TEMP, BLUE ONLY, PAGE 801, PAGE 888 and PAGE 889.

● **KEY LOCK**
- This item locks all buttons and knobs on the front panel except power, input select, and menu buttons.

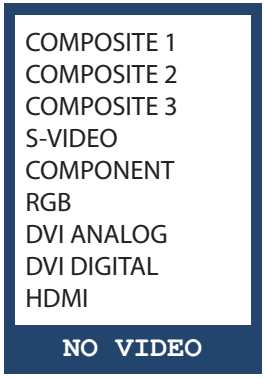
● **INFOMATION**
- Displays board version and current status information.

6. Other Functions

[1] ANALOG

- **This product is capable of processing all input signals usable in ANALOG mode. The ANALOG input settings are as follows:**

1. Press ANALOG button on the front of the product and activate the menu below.



2. Use the [UP]/[DOWN] button to select desired input source, then press the [ENTER] button to confirm.
3. Input signal resolution displays on the bottom of the OSD menu.
4. Press the [ANALOG] button again to remove the OSD menu from display.
5. Menu will disappear from the screen when the set time is over.

<Warning!!>
When using ANALOG mode, always check the input method and modify the setting as needed for optimized output results.

[2] ASPECT

1. Four different aspect modes are available. When input signal is SDI -A/B, Composite 1/2/3 and Input Signal Format is SD :
   1) 4:3 mode : Cuts the sides of the original image to fit to 4:3 aspect ratio.
   2) 16:9 mode : Stretches the image in "1) 4:3 mode" to fit to 16:9 aspect ratio.
   3) 4:3Ex : Extends the image vertically without altering the source image.
   4) 16:9Ex : Stretches the image in "3) 4:3 mode(extend)" to fit to 16:9 aspect ratio.
   * NTSC and PAL signals are known to be 4:3 aspect ratio signals, but their aspect ratio is not exactly 4:3. Therefore, select "1) 4:3 mode) to display the exact 4:3 aspect ratio, select "3) 4:3 mode (extend)" to display the image without altering the source image.
   * ASPECT button lamp status: 1 - 1)/3) Off, 2 - 2)/4) : On.

2. When input signal is COMPOSITE 1/2/3, S-VIDEO, RGB, DVI ANALOG, DVI DIGITAL or HDMI mode, all "1 – 1),2),3),4)" display the image in 4:3 and 16:9 without altering the source image.

3. For the above aspect modes, ZERO SCAN is the standard scan mode. And, in the other scan modes, aspect ratio changes using the image in its selected scan mode.

6. Other Functions

[3] MARKER

1. Press MARKER button to activate the marker.
2. The selected marker type can be displayed on the screen when the marker function is selected from the main menu.

[4] SCAN

- **This product supports various scan modes.**
- **Press the [SCAN] button on the front of the monitor to activate different scan modes.**

1. Press the [SCAN] button continuously to activate various scan modes.
   - OVER SCAN -> ZERO SCAN -> UNDER SCAN -> 2:1 SCAN -> 1:1 SCAN -> FIT WIDTH -> USER ASPECT

2. Scan mode types are differed by connected signal.
   - SDI, COMPONENT, RGB, DVI ANALOG, COMPOSITE 1/2/3, S-VIDEO : OVER SCAN -> ZERO SCAN -> UNDER SCAN -> 2:1 SCAN -> 1:1 SCAN -> FIT WIDTH -> USER ASPECT -> ZOOM(PBP 16:9 mode)
   - DVI DIGITAL, HDMI : OVER SCAN -> ZERO SCAN -> UNDER SCAN -> 2:1 SCAN -> 1:1 SCAN -> USER ASPECT -> ZOOM(PBP 16:9 mode)

3. 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.

6. Other Functions

[4] SCAN

- OVER SCAN : Zooms in/out of the image to 96% of its original size without changing the aspect ratio.

- ZERO SCAN : Zooms in/out of the image without changing the aspect ratio.

- UNDER SCAN : Zooms in/out of the image without changing the aspect ratio. Also, displays the data at the top of the horizontal blanking block.

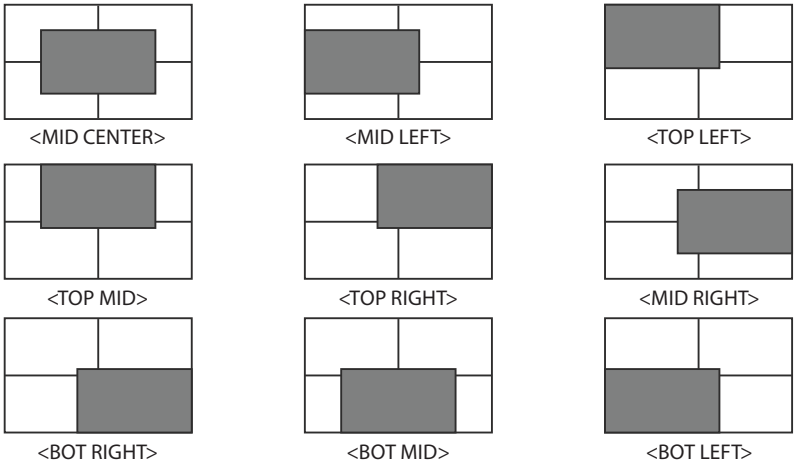
- 2:1 SCAN : Magnifies the original image twice the size. This feature is available only when the size of the original image is ½ size or smaller than the screen size.

- 1:1 SCAN : 1:1 pixel mapping of original image. This feature is available only when the size of the original image is bigger than the screen size. Press the [ENTER] button to rotate the position. MID LEFT -> TOP LEFT -> TOP MID -> TOP RIGHT -> MID RIGHT -> BOT RIGHT -> BOT MID -> BOT LEFT

- FIT WIDTH : In SD mode, zooms in to fit width of the original image to the width of the screen without changing the a spect ratio.

- USER ASPECT : Displays in user aspect ratio of HORIZONTAL and VERTICAL value that is selected under USER ASPECT item in the [PICTURE] MENU.

- 3 X ZO O M : This feature is only available under PBP 16:9 mode and displays the image with 2 x zoom in.
  When “3 X ZOOM” message window appears, press the [ENTER] button to activate vertical position control of image. Use the [UP]/[DOWN] button to adjust the vertical position of image. Press the [ENTER] button again to activate horizontal position control of image. Use the [UP]/[DOWN] button to adjust the horizontal position of image.



<Position change in 1:1 SCAN>

7. DVI / HMDI Support Resolution

DVI ANALOG / DVI DIGITAL / HDMI SUPPORT RESOLUTION

● **DVI-ANALOG mode supports the following modes :**

Resolution	Frequency
640 X 480	60Hz, 75Hz
720 X 400	70Hz
800 X 600	60Hz, 72Hz, 75Hz
1024 X 768	60Hz, 70Hz, 75Hz
1366 X 768	60Hz / 75Hz
1280 X 1024	60Hz / 75Hz
1600 X 1200	60Hz
1920 X 1080	60Hz

● **DVI DIGITAL Graphic mode supports the following modes :**

Resolution	Frequency
640 X 480	60Hz, 75Hz
800 X 600	60Hz, 72Hz, 75Hz
1024 X 768	60Hz, 70Hz, 75Hz
1366 X 768	60Hz / 75Hz
1280 X 1024	60Hz / 75Hz
1600 X 1200	60Hz
1920 X 1080	60Hz

● **DVI DIGITAL / HDMI Video mode supports the following input signals :**

CEA-861	1080i (60 / 59.94)
CEA-861	720i (60 / 59.94)
CEA-861	480i (59.94), 480p (59.94)

● **DVI DIGITAL mode is separated into Graphic mode and Video mode.**
● **In DVI ANALOG/DIGITAL mode, ZERO scan must be selected for normal function.**
● **If the input image is in non-wide mode, press ASPECT button to change to wide display.**

8. Product Specifications

		LVM-245W	
LCD	Size	24"	
	Resolution	1920 X 1200 (16:10)	
	Pixel Pitch	0.270(H) x 0.270(W) mm	
	Color Depth	10BIT 1,073,741,824	
	Viewing Angle	H: 178degrees / V: 178degrees	
	Luminance of white	250 cd/㎡(Typ.)	
	Contrast Ratio	1000:1	
	Display Area	518.4(H) x 324.0(V) mm	
Input	1 X DVI-I	DVI-I(RGB) IN	
	3 X BNC	Analog Input	
	2 X BNC	SDI A/B Channel Input	
	1 X HDMI	HDMI Input	
Output	3 X BNC	Analog Output	
	2 X BNC	SDI A/B Channel (Loop Through Out)	
Input Signal	Analog	Composite/ S-Video / Component / RGB	
	HD-SDI	1.485Gbps	
	SD-SDI	270 Mbps	
	DVI	VESA/IBM Modes	
	HDMI	480i/480p/720p/1080i & VESA/IBM Modes	
Analog Input Spec	Composite	1.0Vpp (with Sync)	
	S-Video	1.0Vpp (Y with Sync), 0.286Vpp(C)	
	Component	1.0Vpp (Y with Sync), 0.7Vpp (Pb,Pr)	
	RGB	1.0Vpp (G with Sync), 0.7Vpp (B,R)	
SDI Input Signal Formats	SMPTE-425M-A/B	1080p (60/59.94/50/30/29.97/25/24/23.98/30sF/29.97sF/25sF/24sF/23.98sF) 1080i (60/59.94/50)	
	SMPTE-372M	Dual HD-SDI YPbPr (4:2:2)	1080p(50/59.94/60)
		Dual HD-SDI YPbPr RGB (4:4:4)	1080i(50/59.94/60)
			1080p/psf(30/29.97/25/24/23.98)
	SMPTE-274M	1080i (60/59.94/50)	
		1080p (30/29.97/25/24/24sF/23.98/23.98sF)	
	SMPTE-296M	720p (60/59.94/50)	
	SMPTE-260M	1035i (60/59.94)	
	SMPTE-125M	480i (59.94)	
	ITU-R BT.656	576i (50)	
	2K Format	2048 x 1080(23.98p/psf, 24p/psf)	
Audio In		Embedded Audio / Analog Stereo (Phone Jack)	
Audio Out		Analog Stereo (Phone Jack), Internal Speaker(Stereo)	
Power		AC100~240V(50~60Hz)	
Power Consumption (Approx.)		73Watts(Typ.)	
Operating Temperature		0℃ to 35℃ (32°F to 95°F)	
Storage Temperature		-20℃ to 60℃ (-4°F to 140°F)	
Main Body Dimensions (mm/inch)		552.5 X 389 X 95.9 / 21.75 X 15.31 X 3.77	
Main Body Dimensions with stand (mm/inch)		586.1 X 416.8 X 150 / 23.07 X 16.4 X 5.9	
Weight		10.35Kg	
Accessory		AC Power Cord, Stand, Manual	
Option		Carrying Case, RMK, ND Filter	

* The specification above may be changed without notice.

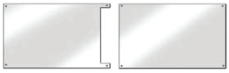
8. Product Specifications

		LVM-327W	
LCD	Size	31.5"	
	Resolution	1920 X 1080	
	Pixel Pitch	0.363(H) X 0.363(W) mm	
	Color Depth	10bit, 1,073,741,824 Colors	
	Viewing Angle	H: 178degrees / V: 178degrees	
	Luminance of white	500 cd/ m^2	
	Contrast Ratio	1300 : 1	
	Display Area	698.40(H) X 392.85(V) mm	
Input Connector	1 X DVI-I	DVI-I(RGB) IN	
	3 X BNC	Analog Input	
	2 X BNC	SDI A/B Channel Input	
	1 X HDMI	HDMI Input	
Output	3 X BNC	Analog Output	
	2 X BNC	SDI A/B Channel (Loop Through Out)	
	1 X BNC	EXT SYNC OUT(Active Through Out)	
Input Signal	Analog	Composite/ S-Video / Component Video / RGB	
	3G-SDI	2.970Gbps	
	HD-SDI	1.485Gbps	
	SD-SDI	270 Mbps	
	DVI	VESA/IBM Modes	
	HDMI	480i / 480p / 720p / 576i / 576p / 1080i / 1080p & VESA / IBM Modes	
Analog Input Spec	Composite	1.0Vpp (with Sync)	
	S-Video	1.0Vpp (Y with Sync), 0.286Vpp(C)	
	Component	1.0Vpp (Y with Sync), 0.7Vpp (Pb,Pr)	
	RGB	1.0Vpp (Y with Sync), 0.7Vpp (Pb,Pr)	
SDI Input Signal Formats	SMPTE-425M-A/B	1080p (60/59.94/50/30/29.97/25/24/23.98/30sF/29.97sF/25sF/24sF/23.98sF) 1080i (60/59.94/50)	
	SMPTE-372M	Dual HD-SDI YPbPr (4:2:2)	1080p(50/59.94/60)
		Dual HD-SDI YPbPr RGB (4:4:4)	1080p(50/59.94/60)
			1080p/psf(30/29.97/25/24/23.98)
	SMPTE-274M	1080i (60/59.94/50)	
		1080p (30/29.97/25/24/24sF/23.98/23.98sF)	
	SMPTE-296M	720p (60/59.94/50)	
	SMPTE-260M	1035i (60/59.94)	
	SMPTE-125M	480i (59.94)	
	ITU-R BT.656	576i (50)	
	2K Format	2048 x 1080(23.98p/psf, 24p/psf)	
Audio In		Embedded Audio / Analog Stereo (Phone Jack)	
Audio Out		Analog Stereo (Phone Jack), Internal Speaker(Stereo)	
Power		AC100~240V(50~60Hz)	
Power Consumption (Approx.)		145 Watts(Max.)	
Operating Temperature		0℃ to 35℃ (32°F to 95°F)	
Storage Temperature		-20℃ to 60℃ (-4°F to 140°F)	
Main Body Dimensions (mm/inch)		769.4 x 485.1 x 102.1 (30.29 x 19.1 x 4.01)	
Main Body Dimensions with stand (mm/inch)		769.4 x 539.3 x 255 (30.29 x 21.23 x 10)	
Box Dimensions (mm/inch)		920 X 675 X 350 (36.22 X 26.57 X 13.78)	
Weight		22.25Kg / 49.05 lbs	
Basic Accessories		AC Power Cord, Stand, Manual	
Optional Accessories		Carrying Case	

* The specification above may be changed without notice.

9. Optional Accessories

ND Glass Filter 17" 24"



External Acrylic Filter 5.6" 7" 9"

Rack Mountable Kit 7" 8.4" 9" 15" 17" 24"

Tripod Head 5.6" 7" 8.4" 9"

V-Mount 15" 17" 8.4"

Hood 5.6" 7" 9" 15" 17"

Carrying Case 5.6" 7" 8.4" 9" 15" 17" 21" 24" 32" 40" 46" 55"

RACK MOUNT ANY DISPLAY UP TO 24”

7 inch 8.4 inch 9 inc h

15 inch 17 inch 21 inch 24 inch

MEMO

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12F, ACE HIGH-END 8, 84 Gasan digital 1-ro, Geumcheon-gu, Seoul, 153-802, KOREA
TEL : +82-70-8668-6611, FAX : 82-2-6123-3201, E-mail : sales@tvlogic.co.kr