AZTEC
ELECTRONIC

LED Processor VP-618

Instruction Manual

USER INSTRUCTION MANUAL

Unpacking: Thank you for purchasing the AZTEC LED Processor VP-618 by AZTECELECTRONIC®. Every AZTEC LED Processor VP-618 has been thoroughly tested and has been shipped in perfect operating condition. Carefully check the shipping carton for damage that may have occurred during shipping. If the carton appears to be damaged, carefully inspect your fixture for any damage and be sure all accessories necessary to operate the unit has arrived intact. In the case damage has been found or parts are missing, please contact our toll free customer support number for further instructions. Do not return this unit to your dealer without first contacting customer support.

Introduction: The AZTEC LED Processor VP-618 is part of AZTEC-ELECTRONIC's continuing pursuit for creating best quality resolution and displays to perfection in LED Displays. AZTEC LED Processor VP-618 is a combination for automation in LED Processor, Video Mixers, and Video Digital Distributor. This is a complete package for Multi-functions LED Packages, with the Easy Operated Buttons capable for Multi-Inputs and Multi-Outputs. The AZTEC VP-618 is capable of playing digital files from Memory / SD-Card / USB 1 & 2, Perfect for Digital Signage solutions.

Customer Support: AZTEC-ELECTRONICS provides a toll free customer support line, to provide set up help and to answer any question should you encounter problems during your set up or initial operation. You may also visit us on the web at www.aztec-electronics.com for any comments or suggestions. Service Hours are Monday through Friday 9:00 a.m. to 5:00 p.m. Pacific Standard Time. E-mail:
support@aztec-electronic.com

Warning! To prevent or reduce the risk of electrical shock or fire, do not expose this unit to rain or moisture.

Caution! There are no user serviceable parts inside this unit. Do not attempt any repairs yourself, doing so will void your manufactures warranty. In the unlikely event your unit may require service please contact AZTEC-ELECTRONIC DEALER / DISTRIBUTOR.

PLEASE recycle the shipping carton when ever possible.

Operators Safety Summary

The general safety information in this summary is for operating personnel.

Do Not Remove Covers or Panels

There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

Power Source

This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

Grounding the Product

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Use the Proper Power Cord

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

Use the Proper Fuse

To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere.

Term and Definitions

The following terms and definitions are used throughout this guide.

· **"ASCII":** American Standard for Information Interchange. The standard code consisting of 7-bit coded characters (8 bits including parity check) used to exchange information between data processing systems, data communication systems, and associated equipment. The ASCII set contains control characters and graphic characters.

· **"Aspect ratio":** The relationship of the horizontal dimension to the vertical dimension of an image. In viewing screens, standard TV is 4:3, or 1.33:1; HDTV is 16:9, or 1.78:1. Sometimes the —:1‖ is implicit, making TV = 1.33 and HDTV = 1.78.

· **"AV":** Audio visual or audio video.

· A **"Background"** is an unscaled source, typically originating from a computer. A background source appears at the system's lowest priority — visually in back of all other sources.

· **"Baudrate"**： Named of J.M.E. Baudot, the inventor of the Baudot telegraph code. The number of the electrical oscillations per second, called baud rate. Related to, but not the same as, transfer rate in bits per second (bps).

· **"Blackburst":** The video waveform without the video elements. It includes the vertical sync, horizontal sync, and the chroma burst information. Blackburst is used to synchronize video equipment to align the video output. One signal is normally used to set up an entire video system or facility. Sometimes it is called House sync.

· **"BNC":** Bayonet Neill-Concelman. A cable connector used extensively in television and named for its inventors. A cylindrical bayonet connector that operates with a twist-locking motion. To make the connection, align the two curved grooves in the collar of the male connector with the two projections on the outside of the female collar, push, and twist. This allows the connector to lock into place without tools.

· **"Brightness":** Usually refers to the amount or intensity of video light produced on a screen without regard to color. Sometimes called —black level.

· —**CAT 5‖:** Category 5. Describes the network cabling standard that consists of four unshielded twisted pairs of copper wire terminated by RJ-45 connectors. CAT 5 cabling supports data rates up to 100 Mbps. CAT 5 is based on the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard.

· **"Color bars":** A standard test pattern of several basic colors (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly
Used color bars are the SMPTE standard color bars. In PAL video, the most commonly used color bars are eight full field bars. In the computer, the most commonly used color bars are two rows of reversed color bars.

"Color burst": In color TV systems, a burst of sub carrier frequency located on the back porch of the composite video signal. This serves as a color synchronizing signal to establish a frequency and phase reference for the chroma signal. Color burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.

"Color temperature": The color quality, expressed in degrees Kelvin (K), of a light source. The higher the color temperature, the bluer the light. The lower the temperature, the redder the light. Benchmark color temperature for the A/V industry includes 5000°K, 6500°K, and 9000°K.

"Contrast ratio": The radio of the high light output level divided by the low light output level. In theory, the contrast radio of the television system should be at least 100:1, if not 300:1. In reality, there are several limitations. In the CRT, light from adjacent elements contaminate the area of each element. Room ambient light will contaminate the light emitted from the CRT. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.

"DVI": Digital Visual Interface. The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video.

"EDID": Extended Display Identification Data – EDID is a data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device. The source device will then output the optimal video format for the display based on the provided EDID data, ensuring proper video image quality. This communication takes place over the DDC – Display Data Channel.

"Ethernet": A Local Area Network (LAN) standard officially known as IEEE 802.3. Ethernet and other LAN technologies are used for interconnecting computers, printers, workstations, terminals, servers, etc. within the same building or campus. Ethernet operates over twisted pair and over coaxial cable at speeds starting at 10Mbps. For LAN interconnectivity, Ethernet is physical link and data link protocol reflecting the two lowest layers of the OSI Reference Model.

"Frame": In interlaced video, a frame is one complete picture. A video frame is made up of two fields, or two sets of interlaced lines. In a film, a frame is one still picture of a series that makes up a motion picture.

"Gamma": The light output of a CRT is not linear with respect to the voltage input. The difference between what you should have and what is actually output is known as gamma.

"HDMI" - High – Definition Multimedia Interface: An interface used primarily in consumer electronics for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable. HDMI is the de facto standard for HDTV displays, Blu-ray Disc players, and other HDTV electronics. Introduced in 2003, the HDMI specification has gone through several revisions.

"HDSDI": The high-definition version of SDI specified in SMPTE-292M. This signal standard transmits audio and video with 10 bit depth and 4:2:2 color quantization over a single coaxial cable with a data rate of 1.485 Gbit/second. Multiple video resolutions exist including progressive 1280x720 and interlaced 1920x1080 resolutions. Up to 32 audio signals are carried in the ancillary data.

"JPEG" (Joint photographic Expects Group): Commonly used method of loss compression for photographic images using a discreet cosine transfer function. The degree of compression can be adjusted, allowing a selectable tradeoff between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality. Produces blocking artifacts.

"MPEG": Motion Picture Expect Group. A standard committee under the auspices of the International Standards Organization working on algorithm standards that allows digital compression, storage and transmission of moving image information such as motion video, CD-quality audio, and control data at CD-ROM bandwidth. The MPEG algorithm provides inter-frame compression of video images and can have an effective compression rate of 100:1 to 200:1.

"NTSC": The color video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. A color signal must be compatible with black-and-white TV sets. NTSC utilizes an interlaced video signals, 525 lines of resolution with a refresh rate of 60 fields per second (60 Hz). Each frame is comprised of two fields of 262.5 lines each, running at an effective rate of 30 frames per second.

"PAL": Phase Alternate Line. A television standard in which the phase of the color carrier is alternated from line to line. It takes four full pictures (8 fields) for the color-to-horizontal phase relationship to return to the reference point. This alternation helps cancel out phase errors. For this reason, the hue control is not needed on a PAL TV set. PAL, in many transmission forms, is widely used in Western Europe, Australia, Africa, the Middle East, and Micronesia. PAL uses 625-line, 50-filed (25 fps) composite color transmission system.

"Operator": Refers to the person who uses the system.

"PIP": Picture-in-Picture. A small picture within a larger picture created by scaling down one of the images to make it smaller. Each picture requires a separate video source such as a camera, VCR, or computer. Other forms of PIP displays include Picture-by-Picture (PBP) and Picture-with-Picture (PWP), which are commonly used with 16:9 aspect display devices. PBP and PWP image formats require a separate scaler for each video window.

"Polarity": The positive and negative orientation of a signal. Polarity usually refers to the direction or a level with respect to a reference (e.g. positive sync polarity means that sync occurs when the signal is going in the positive direction).

"RJ-45": Registered Jack-45. A connector similar to a telephone connector that holds up to eight wires used for connecting Ethernet devices.

—**RS-232":** An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either DB-9 or DB-25 connectors. This standard is used for relatively short-range communication and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length, and type of connector to be used. The standard specifies component connection standards with regard to the computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard.

"Saturation": Chroma, chroma gain. The intensity of the color, or the extent to which a given color in any image is free from white. The less white in a color, the truer the color or the greater its saturation. On a display device, the color control adjusts the saturation. Not to be confused with the brightness, saturation is the amount of pigment in a color, and not the intensity. Low saturation is like adding white to the color. For example, a low-saturated red looks pink.

"Scaling": A conversion of a video or computer graphic signal from a starting resolution to a new resolution. Scaling from one resolution to another is typically done to optimize the signal for input to an image processor, transmission path or to improve its quality when presented on a particular display.

"SDI": Serial Digital Interface. The standard based on a 270 Mbps transfer rate. This is a 10-bit, scrambled, polarity independent interface with common scrambling for both component ITU-R 601 and composite digital video and four channels of (embedded) digital audio.

"Seamless Switching": A feature found on many Extron video switchers. This feature causes the switcher to wait until the vertical interval to switch. This avoids a glitch (temporary scrambling) which normally is seen when switching between sources.

"SMPTE": Society of Motion Picture and Television Engineers. A global organization, based in the United States that sets standards for base band visual communications. This includes film as well as video and television standards.

"S-Video": A composite video signal separated into the luma (—Y‖ is for luma, or black and white information; brightness) and the chroma (—C‖ is an abbreviation for chroma, or color information).

"Sync": Synchronization. In video, sync is a means of controlling the timing of an event with respect to other events. This is accomplished with timing pulses to insure that each step in a process occurs at the correct time. For example, horizontal sync determines exactly when to begin each horizontal scan line. Vertical sync determines when the image is to be refreshed to start a new field or frame. There are many other types of sync in video system. (Also known as —sync signal‖ or —sync pulse.‖)

"TCP/IP": Transmission Control Protocol/Internet Protocol. The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.

"USB": Universal Serial Bus. USB was developed by seven PC and telecom industry leaders (Compaq, DEC, IBM, Intel, Microsoft, NEC, and Northern Telecom). The goal was easy plug-and-play expansion outside the box, requiring no additional circuit cards. Up to 127 external computer devices may be added through a USB hub, which may be conveniently located in a keyboard or monitor. USB devices can be attached or detached without removing computer power. The number of devices being designed for USB continues to grow, from keyboards, mice, and printers to scanners, digital cameras, and ZIP drives.

"VESA": Video Electronics Standards Association. A nonprofit number organization dedicated to facilitating and promoting personal computer graphics through improved standards for the benefit of the end-user. www.vesa.org

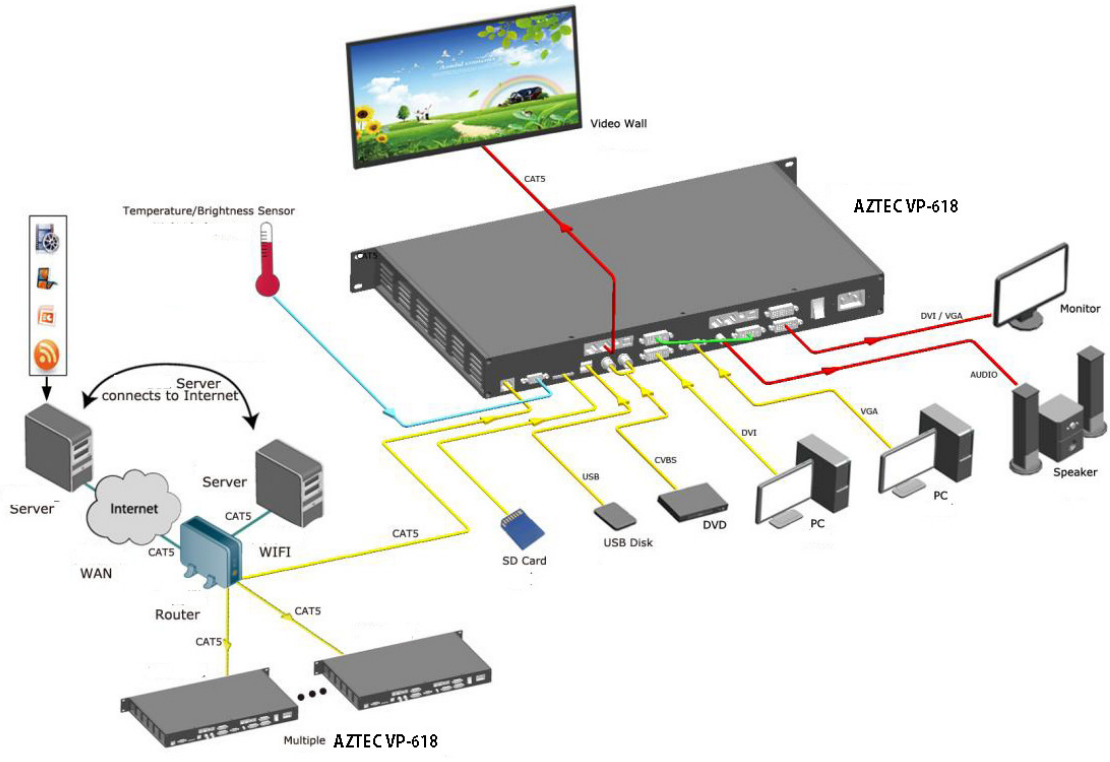
"VGA": Video Graphics Array. Introduced by IBM in 1987, VGA is an analog signal with TTL level separate horizontal and vertical sync. The video outputs to a 15-pin HD connector and has a horizontal scan frequency of 31.5 kHz and vertical frequency of 70 Hz (Mode 1, 2) and 60 Hz (Mode 3). The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using the 8514/A card (35.5 kHz, 86 Hz) in mode 4. It has a pixel by line resolution of 640×480 with a color palette of 16 bits and 256,000 colors.

"YCrCb": Used to describe the color space for interlaced component video.

"YPbPr": Used to describe the color space for progressive-scan (non-interlaced) component video.

System Overview

AZTEC LED Processor VP 618 is the latest development in LED video processing, providing basic inputs and versatile functionality for both mobile and fixed installation advertising markets. Utilizing the latest in motion adaptive de-interlacing, true color reconstruction and dynamic range adjustment technologies enables the processor to provide high quality pixel based scaling for all inputs including the integrated USB media interface. It supports 2 composite (CVBS), 1 VGA, 1 DVI (compatible with HDMI1.3), 1 SD card, 4 USB inputs, and 1 audio, 2 DVI, 1 VGA outputs.

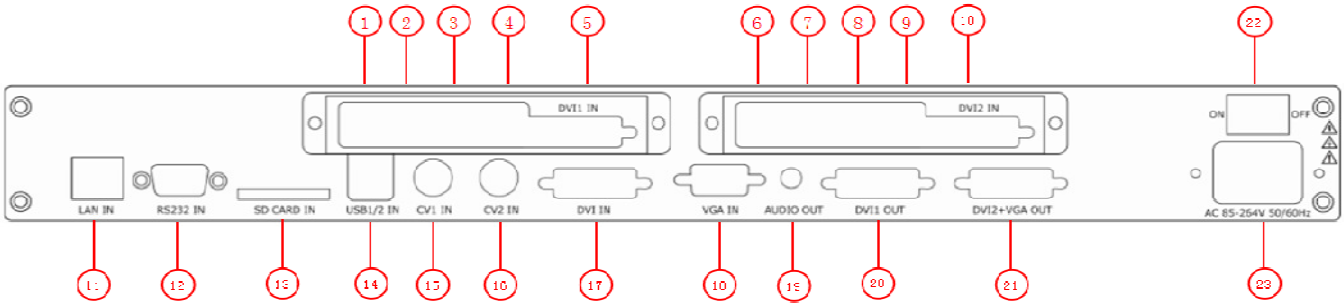


2. Hardware Orientation

AZTEC VP 618 Back Panel

AZTEC VP-618 Back Panel

The figure below illustrates the professional interface and control signals of VP 618 back panel.



NO	INTERFACE	NO	INTERFACE
1.2.6.7.11	10/100M Interface RJ45	17	DVI Input DVI-I
3.8	Power supply port of Sending Card	18	VGA Input DSUB15 port
4.9	USB control port of Sending Card	19	Audio Output
5.10	DVI input port of sending card	20	DVI Output DVI-I
12	RS232 Interface	21	DVI+VGA DVI-I Output
13	SD card input	22	Switch
14	USB input port	23	Power IEC-3 port
15.16	CVBS Input BNC port		

CONT Interface

11. 10/100M Interface RJ45

12. RS232 Interface

It is used to connect the computer.

INPUT Interface

It includes 2 CVBS (BNC port), 4 USB, 1 DVI-I(compatible with the HDMI input), 1 VGA (DB15port), and 1 SD card Input.

13：SD Card Input
SD card input interface, it is mainly used to store video program package or application upgrade package.

14：USB Input
USB input interface: can access the USB device or mobile hard disk with USB storage function. Support image formats: JPGE, BMP, PNG; Support video formats: MP4, MPEG1, MPEG2, RMVB, MJPG. Mainly used to store video program package (USB function can only achieve when transcoding through PC).

15. 16：CVBS Input
CVBS input. Can receive standard video signal from players, cameras etc. Input supports resolution 480i and 576i via BNC. Support standards include: PAL, NTSC and SECAM.

17：DVI Input
DVI input interface: Input the video signal from computer, DVI signal generator. Connect to the same DVI interface on VSP 112; （This Connection does not support hot-plugging）
Note

18：VGA Input
VGA Interface input the video signal from HD player and Computer, etc. compatible with YPbPr signal, input signal via the DB9 interface.
OUTPUT

1.2.6.7: 10/100M Interface RJ45
Gigabit copper port, used to connect LED screen.

3. 8：Power Supply Port of Sending Card
Power has been already supplied by video processor itself, no external power supply needed.

4. 9：USB Control Port of Sending Card
power amplifier system. Can be connected with the DVI output interface video processor directly.（This connector does not support hot-plugging）

20：DVI Output
Connect to the monitor or LED screen which has DVI interface （This DVI connector does not support hot-plugging）.

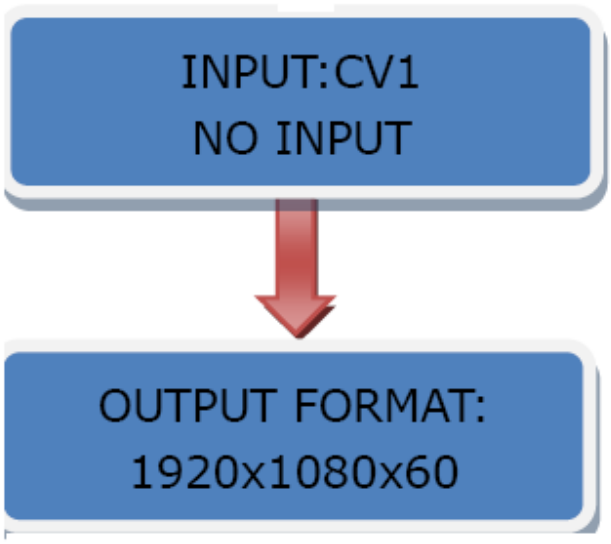
21：DVI +VGA DVI Output
DVI +VGA output via DVI connector connect to the monitor or LED screen which has DVI interface. （This DVI connector does not support hot-plugging）. DVI +VGA, VGA output connector can be connected to monitor or projector which has VGA interface.

22.23：Power Interface and Switch
AC 85-264V 3.8A 50/60Hz IEC-3 Power Interface

AZTEC VP-618 Front Panel

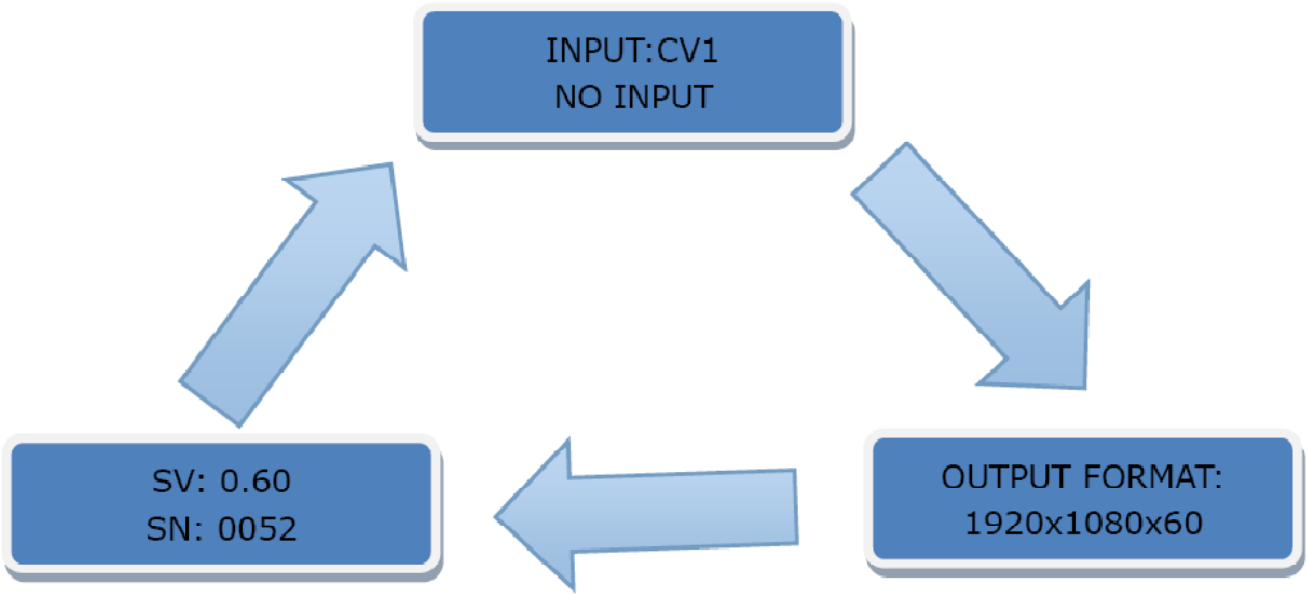
Insert power cord and push power to ON position. LCD module on the front panel will show device information and go into self verification before it load last setting and send processed image to the target monitor. For the first setup, CV1 input is default source. With front panel keyboard, user can operate AZTEC VP-618 through the menus on LCD panel.

AZTEC VP-618 front panel as shown in figure:

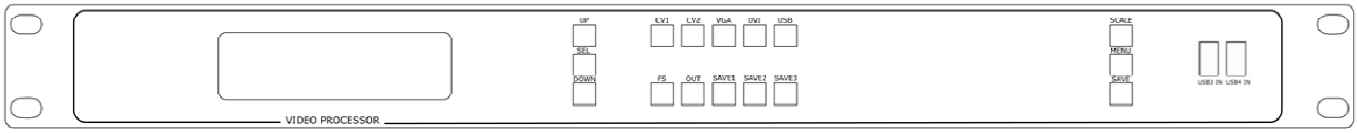


System into the Circulation Statement:

Cycle process displays the current input signal source, the current output format, the current program version information, the current equipment serial number; the user hold equipment serial number will get more effective service and support



AZTEC VP-618 Front Panel Drawing:

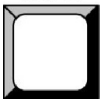


LCD Panel

Used to show button menu and menus for interactive communication；

Signal Keys

CV1



CV1 input selection button, its LED light turns on, output will be switched to this channel;

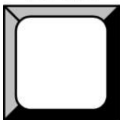
CV2

CV2 input selection button, its LED light turns on, output will be switched to this channel;

VGA

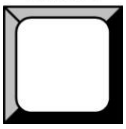
VGA input selection button, its LED light turns on, output will be switched to this channel;

DVI



DVI input selection button, its LED light turns on, output will be switched to this channel;

USB



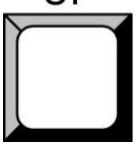
USB input selection, its LED light turns on, output will be switched to this channel, and the LCD panel will show the network, WIFI, USB and SD card information.

Function Keys

SEL

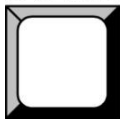
Push to confirm the current choice item

UP



Push to select up items in LCD menu;

DOWN

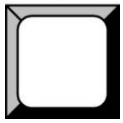


Push to select down items in LCD menu;

FS

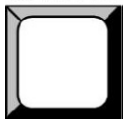
Switch to select full size or screen size, just for single picture mode;

OUT



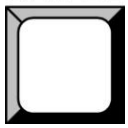
Push to select the output format by using the UP/ DOWN key.

SAVE1



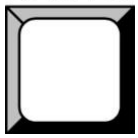
Switch to use the user-defined mode 1;

SAVE2



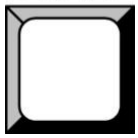
Switch to use the user-defined mode 2;

SAVE3



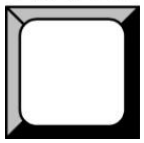
Switch to use the user-defined mode 3;

SCALE



Push to go to between scale·zoom·crop·scale mode;

MENU

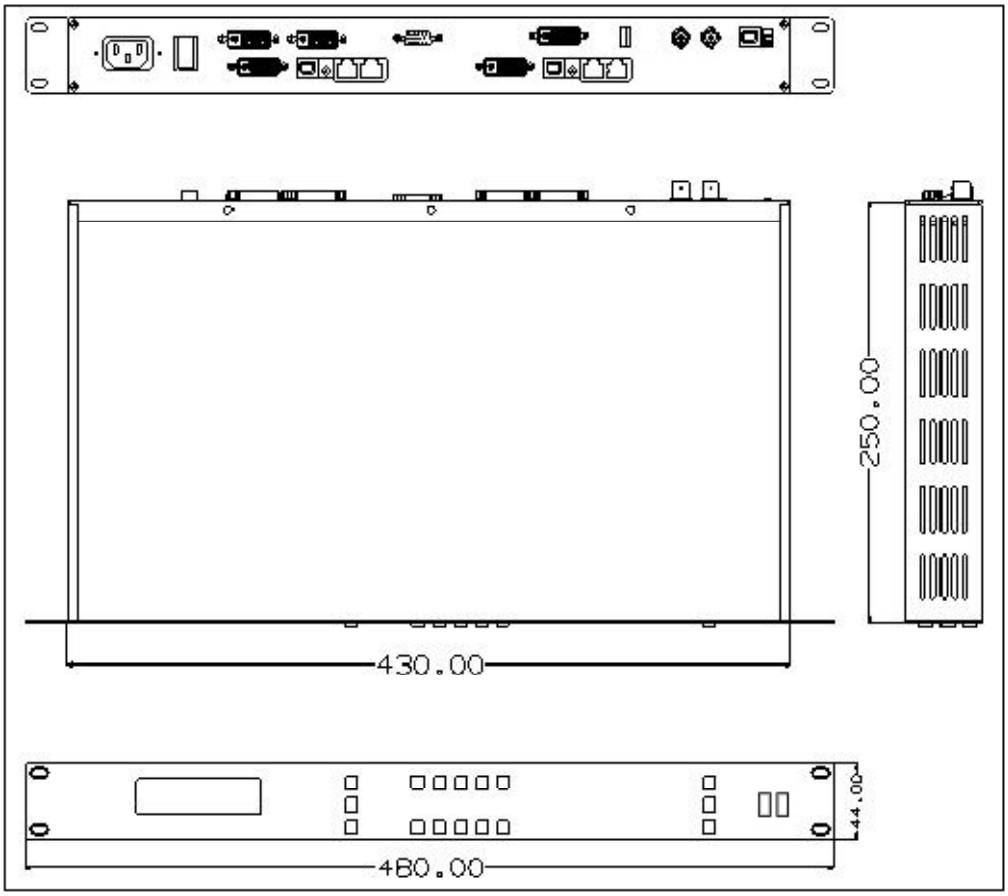


Advanced menu: press the **MENU** to enter the main menu, the submenus: Device information, Factory Reset, Language and Alpha setting are all included. Push the UP/DOWN to select the relevant submenu. For details,
please refer to MENU in menu orientation

SAVE

Push to save current config.

SIZE OF AZTEC VP-618 Processor:



Safety Precautions

For all AZTEC VP-618 LED processor installation procedures, please observe the following important safety and handling rules to avoid damage to yourself and the equipment.

- To protect users from electric-shock, ensure that the chassis connects to earth via the ground wire provided in the AC power Cord.

- The AC Socket-outlet should be installed near the equipment and be easily accessible.

Unpacking and Inspection

Before opening AZTEC VP-618 process shipping box, inspect it for damage. If you find any damage, notify the shipping carrier immediately for all claims adjustments. As you open the box, compare its contents against the packing slip. If you find any shortages, contact your sales representative. Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

4. Menu Orientation

In This Chapter

This chapter describes all AZTEC VP-618 processor menus, including how they are accessed, the functions that are available, and descriptions of each menu tree (in block diagram format). The following topics are discussed:

- **MENU**

· INPUT

· OUTPUT

· TRANSITION

· AUDIO

· SPLIT

· SAVE SETUP

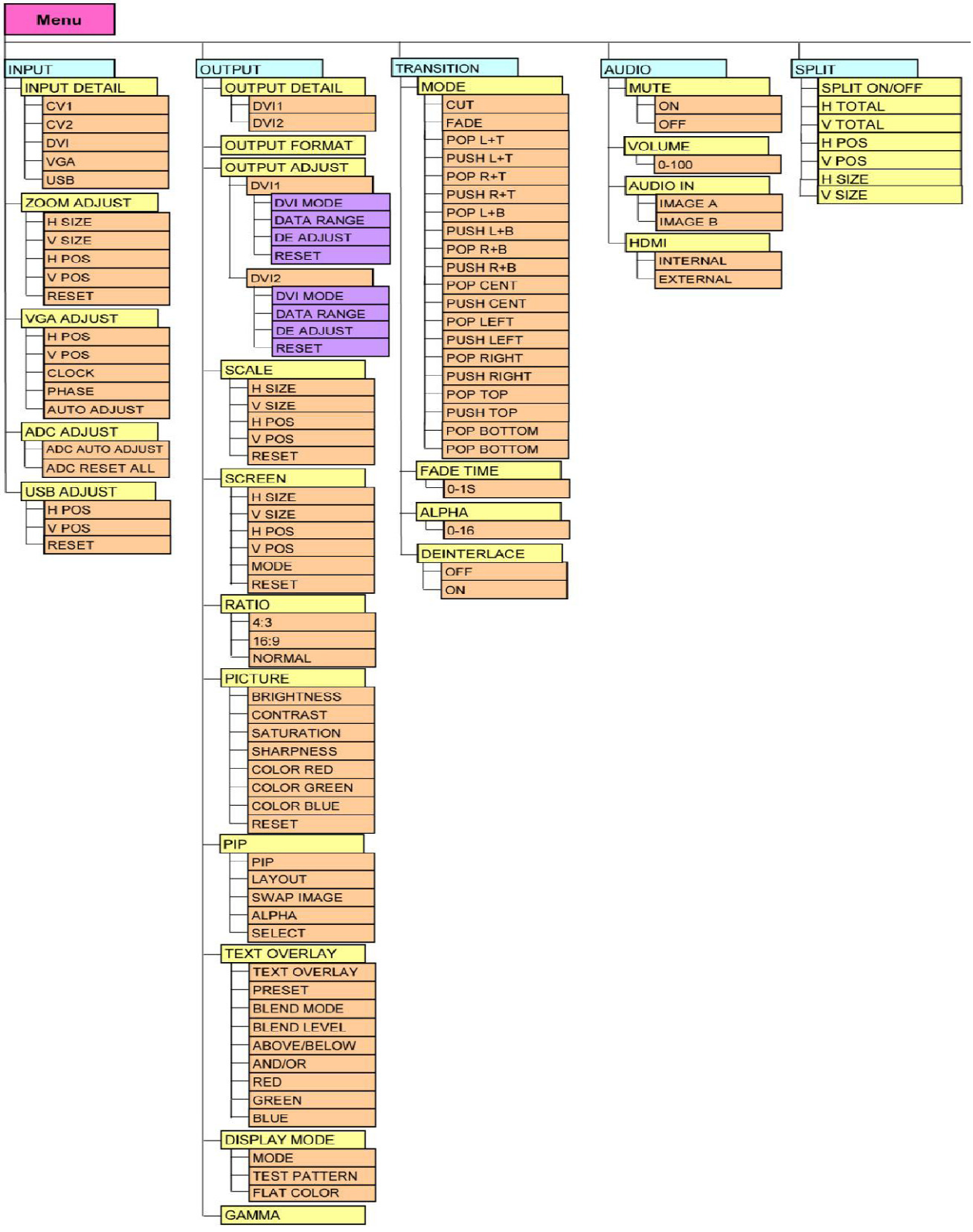
· SYSTEM

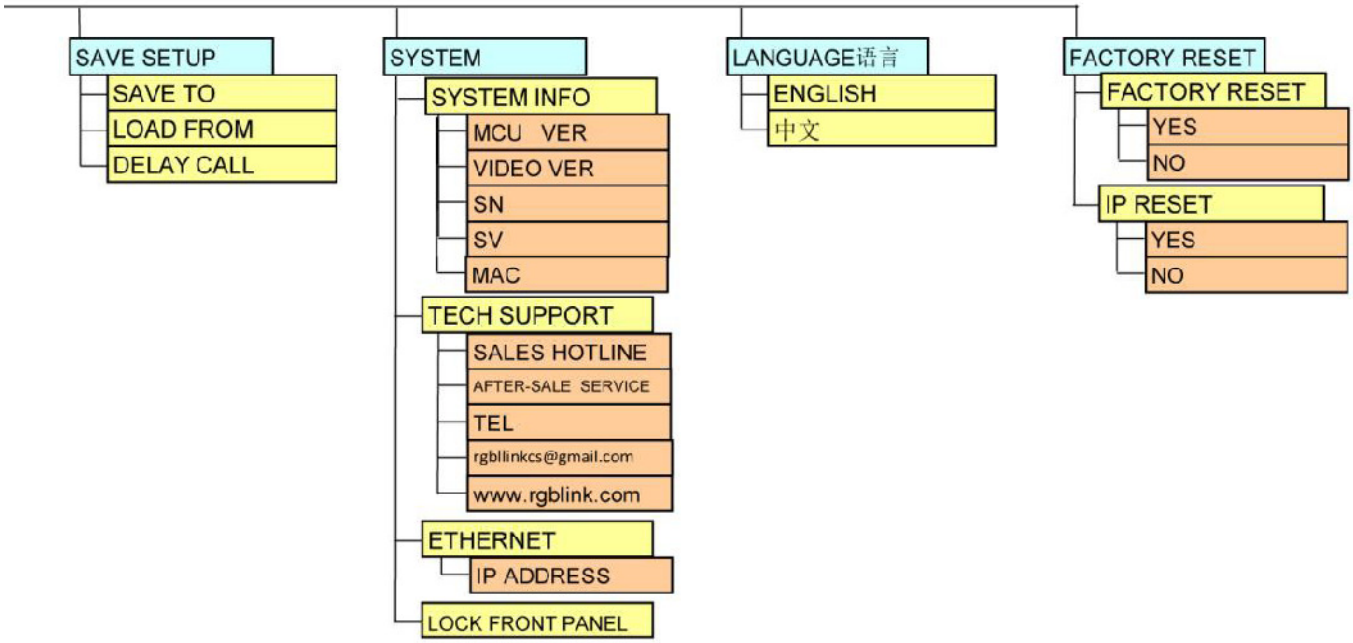
· LANGUAGE

· FACTORY RESET

MENU

Press the **MENU** to main menu, main menu as shown below. Press knob buttons to select left or right menu item. —*‖ before the menu means it's in selected state. Press knob button to enter corresponding setting or view the menu.





MENU---INPUT

Select INPUT, press it to confirm, show level 2 menus as follows:

INPUT DETAIL:
Display input signal information, including CV1, CV2, DVI, VGA, USB.

ZOOM ADJUST: It can adjust the position and the scale, as following:
H SIZE: Width setting.
V SIZE: Height setting.
H Pos: Horizontal phase setting.
V Pos: Vertical phase setting.
RESET: If quality image distort by mistake in improper operation, it can be initialized operation to recover factory setting.

VGA ADJUST：Mainly aimed at H POS, V POS, CLOCK, PHASE when VGA input. It also can use the AUTO ADJUST to adjust.

ADC AUTO ADJUST：Mainly aim at the BRIGHTNESS to auto adjusting.

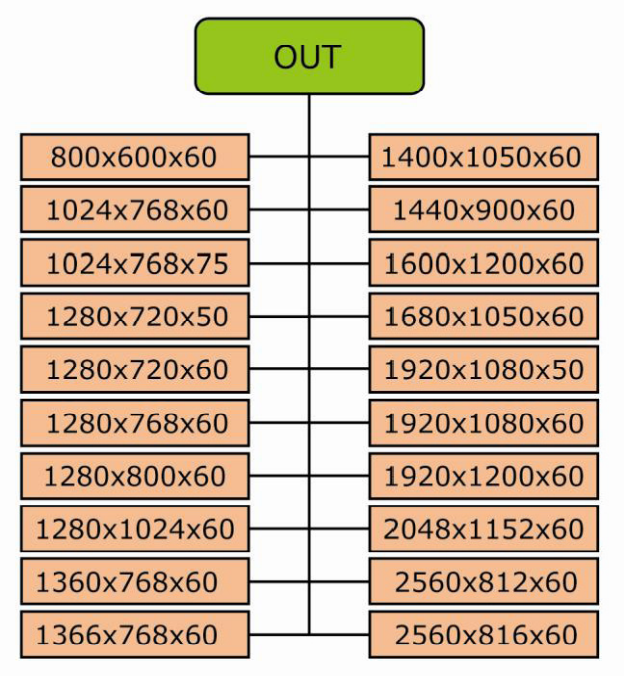
USB ADJUST： Mainly aimed at H POS, V POS when USB input. It also can use the AUTO ADJUST to adjust. If quality image distort by mistake in improper operation, it can be initialized operation to recover factory setting.

MENU ---OUTPUT

Select OUTPUT, press it to confirm, show level 2 menus as follows:

OUTPUT DETAIL:
Display output signal information, including DV1, DV2,

OUT FORMAT:
Mainly display the current output signal and output resolution. Users can choose different output formats through the UP/DOWN button, this option includes 20 common output resolutions, shown as follow



OUTPUT ADJUST:

Output adjust menu, the sub-menu as following: DVI1, setting as following:
DVI MODE: Can select HDMI agreement or DVI; by default is DVI output, When need HDMI signal output, choose HDMI.
DATE RANGE: DVI1 out range adjustment can choose RGB or YCBCR; among them the RGB adjusting range is between 0-255, YCBCR adjusting range from 16 to 235. DE ADJUST: DE adjust, the sub-menu as following: DE ON/OFF: Can choose to open or close, when choose open, it can be adjusted to DE, as follows:
H SIZE: Width setting;
V SIZE: Height setting;
H Pos: Horizontal phase setting;
V Pos: Vertical phase setting;

When the signal source of the screen appear black side, can use this function adjustment, make the image to full screen display.

RESET: If quality image distorts by mistake in improper operation, it can be initialized operation to recover factory setting. DVI2: Including DVI MODE, DATA RANGE, DE ADJUST, and RESET, same with DVI1.

SCALE:

Scale menu as following:
H SIZE: Width setting.
V SIZE: Height setting.
H Pos: Horizontal phase setting.
V Pos: Vertical phase setting.
RESET: If quality image distorts by mistake in improper operation, it can be initialized operation to recover factory setting.

SCREEN:

Screen setting, user can change the screen through the digital setting parameters to easily change the screen size and position. Mainly used in the LED large screen users. Settings as follow:
H SIZE: Width setting;
V SIZE: Height setting;
H Pos: Horizontal phase setting;
V Pos: Vertical phase setting;
Mode: window mode, can scale the（Screen）and（Full）switch.

RESET:

If quality image distorts by mistake in improper operation, it can be initialized operation to recover factory setting.

RATIO:

Proportional setting, press it, can realize the conversion between high and wide. Normal: Original video proportion, 4:3 aspect ratios; 16:9 aspect ratios;

PICTURE:

Picture setting, the sub-menu as following:
BRIGHTNESS: It can change the image color BRIGHTNESS via BRIGHTNESS Settings.
CONTRAST: It can change the image color CONTRAST via CONTRAST settings.
SATURATION: It can change the image color SATURATION via SATURATION Settings.
SHARPNESS: It can change the image color SHARPNESS via SHARPNESS Settings.
COLOR RED: It can change the image color Red via Red Settings.
COLOR GREEN: It can change the image color Green via Green Settings.
COLOR BLUE: It can change the image color Blue via Blue Settings.
RESET: If quality image distorts by mistake in improper operation, it can be initialized operation to recover factory setting. Users can set according to their actual situation, this function mainly suitable for these very professional for image quality. Non-professionals are not suggesting above operations. If quality image distorted by mistake in improper operation, it can be initialized operation to recover factory setting. The numerical range that needs adjusting is between 0-100. Press MENU to exit and return to higher level MENU.

PIP:
PIP setting, press PIP and choose ON to set PIP mode. LAYOUT: Can choose PIP layout, the corresponding results are as follows:

PIP L+T

PBP L+R

PBP T+B

SWAP IMAGE:
It can set PIP to swap exchange, when choose ON, it can realize the main and sub-picture exchange.
ALPHA:
Can set the image display transparency, regulating range between 0 - 16.
SELECT:
Can choose to set the size or position of IMAGE A or IMAGE B individually.

TEXT OVERLAY:
Text overlay function, settings as follows:
TEXT OVERLAY:
Can select —ON‖ or —OFF‖,
OFF is the default state.
PRESET: Can preset value of the following functions, and total 13 modes:
User: User mode. WhOnBk1: White On Black 1. WhOnBk2: White On Black 2. BkOnWh1: Black On White 1. BkOnWh2: Black On White 2. GrnOnBk1: Green On Black 1. GrnOnBk2: Green On Black 2. GrnOnWh1: Green On White 1. GrnOnWh2: Green On White 2. RedOnBk1: Red On Black 1. RedOnBk2: Red On Black 2. RedOnWh1: Red On White 1. RedOnWh2: Red On White 2.

BLEND MODE:
Blend mode, with two modes,
—Mode 1‖ and — Mode 2‖.

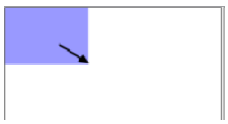
Mode 1: Graphic content locate at the top and is non-transparent, background transparency is controlled by double-picture transparency;
Mode 2: Graphic content is controlled by double-picture transparency, the background is completely transparent;
BLEND LEVEL: Can set the image display transparency, regulating range between 0 - 16. ABOVE/BELOW: ABOVE: In image 2, if the pixel value is higher than the setting value, then the image is the graphic content pixel, otherwise, it is the graphic background pixel. It should combined with "AND/OR" conditions when judging. BELOW: In image 2, if the pixel value is lower than the setting value, then the image is the graphic content pixel, otherwise, it is the graphic background pixel. It should combined with "AND/OR" conditions when judging. AND/OR: AND: All —Red, Green, Blue‖ value must meet ABOVE or BELOW conditions. OR: Any one of —Red, Green, Blue‖ value should meet ABOVE or BELOW conditions. RED: Red limit, cut-off point condition of ABOVE and BELOW condition in red channel, the range is 0 ~ 255. GREEN: Green limit, cut-off point condition of ABOVE and BELOW condition in green channel, the range is 0 ~ 255. BLUE: Blue limit, cut-off point condition of ABOVE and BELOW condition in blue channel, the range is 0 ~ 255.

DISPLAY MODE:
MODE: Image mode selection, user can choose different output modes according to their requirement, such as: black, video image, freeze image, pure color image, test pattern. TEST PATTERN: Test pattern setting, press UP/DOWN button, there are 1-66 kinds of modes for choose. FLAT COLOR: When the output mode is pure color image, choose corresponding red, green and blue color value in this option to meet the practical needs. **GAMMA:** Gamma setting, press it to adjust the image gamma value; Gamma values include: -1.2, -1.4, -1.6, 1, 1.2, 1.4, 1.6, sRGB;

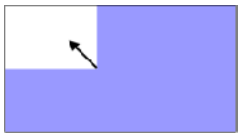
MENU --- TRANSITION

Choose the TRANSITION, press SEL to confirm, then the LCD screen displays the level 2 menu as following:
MODE: Switch mode, including the following modes:
CUT: Seamless switching.
FADE: Fade in fade out.

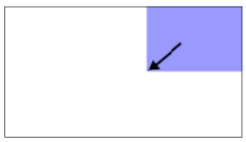
POP L+T: Upper left corner pop up



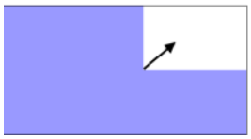
PUSH L+T: Upper left corner push



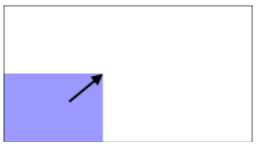
POP R+T: Upper right corner pop up



PUSH R+T: Upper right corner push



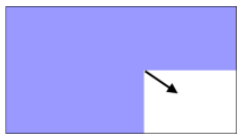
POP L+B: Lower left corner pop up



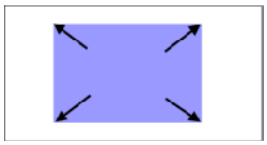
PUSH L+B: Lower left corner push

POP R+B: Lower right corner pop up

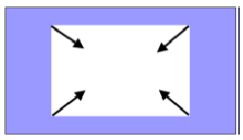
PUSH R+B: Lower right corner push



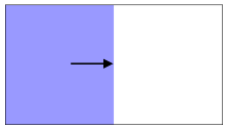
POP CENTRE: Centre pop up

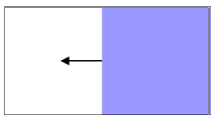


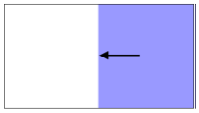
PUSH CENTRE: Centre push

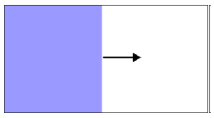


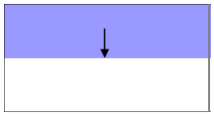
POP LEFT: Left pop up

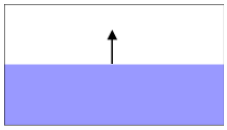


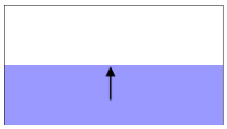
PUSH LEFT: Left push 

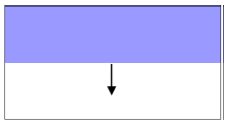
POP RIGHT: Right pop up 

PUSH RIGHT: Right push 

POP TOP: Top pop up 

PUSH TOP: Top push 

POP BOTTOM: Bottom pop up 

PUSH BOTTOM: Bottom push 

Note:  On behalf of the image emerging;

 On behalf of the image disappearing;

Arrows represents the direction of the image move, that is, the image that arrow point, is compressed or stretched to the direction that arrow indicates, until disappear or full screen.

FADE TIME:
Switch time setting. Press UP/DOWN button to choose the time and press SEL to confirm. The switching time ranges from 0 to1.0.

ALPHA:
It can set the image transparency, regulating range between 0 - 16.

DEINTERLACE:
Force Deinterlace function, can choose —ON‖ or —OFF‖. ON: Force interlace, no effect switching. OFF: No deinterlace, with effect switching.

MENU --- AUDIO

MUTE:
Mute, can open or close it.

VOLUME:
Volume adjustment.

AUDIO IN:
Can choose audio input source for IMAGE A main image or IMAGE B sub-image.

HDMI:
Can choose HMDI audio as INTERNAL embedded audio or EXTERNAL audio.

MENU --- SPLIT

Choose the SPLIT, press SEL to confirm, then the LCD screen displays the level 2 menu as following:
SPLIT ON/OFF: Split function, can choose —ON‖ or —OFF‖.
H TOTAL: Horizontal total.
V TOTAL: Vertical total.
H SIZE: Width setting.
V SIZE: Height setting.
H POS: Horizontal phase setting.
V POS: Vertical phase setting.

MENU --- SAVE SETUP

SAVE TO:
The device provides ten save modes, users can save the current operation to SAVE1, SAVE2, SAVE3;

LOAD FROM:
It can call the saved user modes via the call save function.

DELAY CALL:
Set delay the output time. When more than one equipment power on, and the processor is the end equipment in order to improve question that can't identify the input signal and phenomenon that LED screen appear messy code and flash screen, now need to delay the input time.