



**Machine Models Compatible for Connection with this Product**

**DLA-HD2KU**

This product (LD-HD2KU) is exclusively for the above-mentioned model. The performance cannot be guaranteed when using with other models.

This processor is used as a dedicated machine and this manual (instruction manual) may contain description of features as well as specifications not used by the processor.

**DLA-HD2KE**

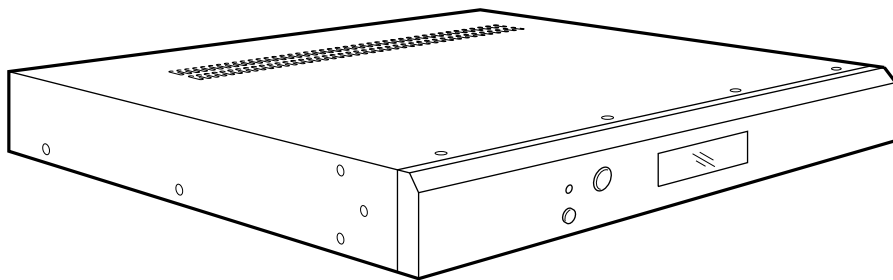
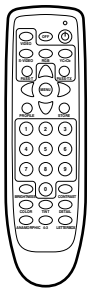
This product (LD-HD2KE) is exclusively for the above-mentioned model. The performance cannot be guaranteed when using with other models.

This processor is used as a dedicated machine and this manual (instruction manual) may contain description of features as well as specifications not used by the processor.

## DIGITAL VIDEO PROCESSOR

# LD-HD2KU/LD-HD2KE

# INSTRUCTIONS



**For customer Use:**

Enter below the Serial No. which is located on the side panel of the cabinet. Retain this information for future reference.

Model No. LD-HD2KU \_\_\_\_\_

Serial No. \_\_\_\_\_

# SAFETY PRECAUTIONS

## IMPORTANT INFORMATION

**WARNING: TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

### CAUTION:

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

This product is equipped with a 3-blade grounding type plug to satisfy UL, CUL, TUV, FCC rules.

If you are unable to insert the plug into the outlet, contact your electrician.

## FCC INFORMATION (U.S.A. ONLY)

### CAUTION:

Changes or modifications not approved by JVC could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

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

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

### About the installation place

Do not install the processor in a place that cannot support its weight securely, or that does not allow for proper heat ventilation.

## IMPORTANT SAFEGUARDS

**IMPROPER USE OF THIS EQUIPMENT CAN RESULT IN POTENTIAL ELECTRICAL SHOCK OR FIRE HAZARD.**

In order not to defeat the safeguards incorporated into this product, observe the following basic rules for its installation, use and service.

- All the safety and operating instructions should be read before the product is operated.
- The safety and operating instructions should be followed and retained for future reference.
- All warnings on the product and in the operating instructions should be adhered to.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use attachments not recommended by the product manufacturer as they may be hazardous.
- Do not use this product near water. Do not use immediately after moving from a low temperature to high temperature, as this causes condensation, which may result in fire, electric shock, or other hazards.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. The product should be mounted according to the manufacturer's instructions, and should use a mount recommended by the manufacturer.
- When the product is used on a cart, care should be taken to avoid quick stops, excessive force, and uneven surfaces which may cause the product and cart to overturn, damaging equipment or causing possible injury to the operator.
- Slots and openings in the cabinet are provided for ventilation. These ensure reliable operation of the product and protect it from overheating. These openings must not be blocked or covered. (The openings should never be blocked by placing the product on bed, sofa, rug, or similar surface. It should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and the manufacturer's instructions have been adhered to.)
- This product should be operated only with the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company.
- This product is equipped with a three-wire plug. This plug will fit only into a grounded power outlet. If you are unable to insert the plug into the outlet, contact your electrician to install the proper outlet. Do not defeat the safety purpose of the grounded plug.
- Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at doors, plugs, receptacles, and the point where they exit from the product.
- For added protection of this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the product due to lightning and power line surges.

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- Do not overload wall outlets, extension cords, or convenience receptacles on other equipment as this can result in a risk of fire or electric shock.
  - Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
  - Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltages and other hazards. Refer all service to qualified service personnel.
  - Unplug this product from the wall outlet and refer service to qualified service personnel under the following conditions:
    - a) When the power supply cord or plug is damaged.
    - b) If liquid has been spilled, or objects have fallen on the product.
    - c) If the product has been exposed to rain or water.
    - d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the Operation Manual, as an improper adjustment of controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
    - e) If the product has been dropped or damaged in any way.
    - f) When the product exhibits a distinct change in performance – this indicates a need for service.
  - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or with same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
  - Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
  - The product should be placed more than one foot away from heat sources such as radiators, heat registers, stoves, and other products (including amplifiers) that produce heat.
  - When connecting other products such as VCR's, and personal computers, you should turn off the power of this product for protection against electric shock.
  - Use only the accessory cord designed for this product to prevent shock.

The power supply voltage rating of this product is AC 120 V, AC 100 V - AC 240 V, the power cord attached conforms to the following power supply voltage. Use only the power cord designated by our dealer to ensure Safety and EMC. When it is used by other power supply voltage, power cable must be changed.

Ensure that the power cable used for the projector is the correct type for the AC outlet in your country.  
Consult your product dealer.

**\*DO NOT allow any unqualified person to install the unit.**

Be sure to ask your dealer to install the unit since special technical knowledge and skills are required for installation and connection to multiple devices.

If installation is performed by an unqualified person, it may cause personal injury or electrical shock.

**Precautions for using the screen terminal**

Connect the cable to the screen before using the screen terminal of this unit.

Signal with DC+12 V/100 mA max. is output from the screen terminal of this unit.

Short-circuit will result in malfunction, fire and electric shock. Leave the connection of the wires to the installation contractor.

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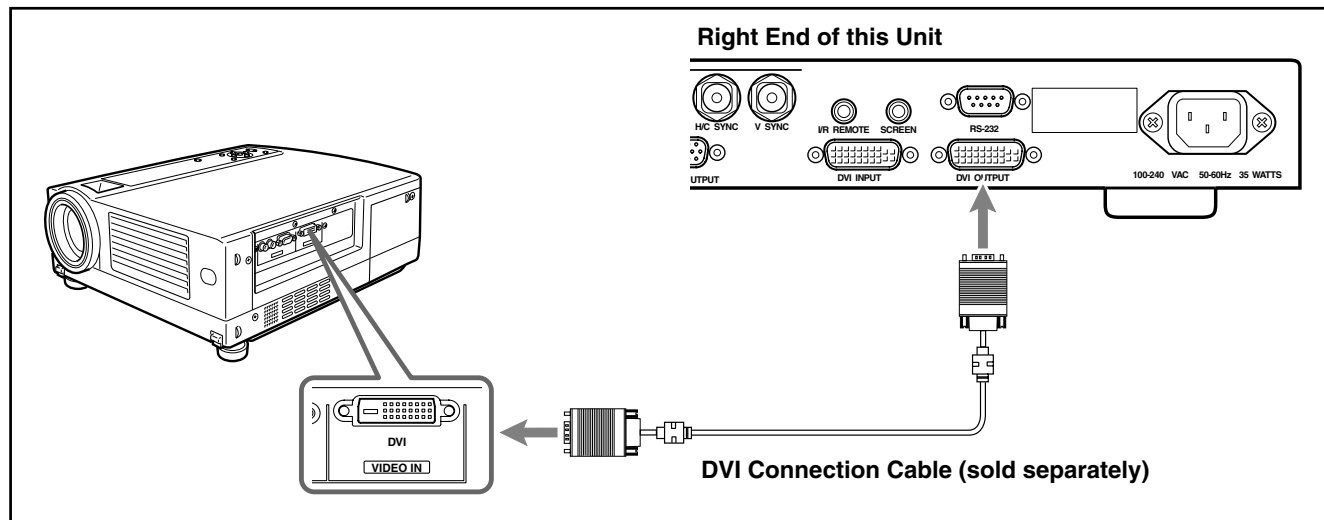
# QUICK START

## Connection with Other Devices

Before connecting to other devices, ensure to turn off the power supply of the device to be connected with the digital video processor.

### ■ Connecting to a Projector

- Read through the projector's instruction manual thoroughly.
- Depending on the DVI cable used, signals may be attenuated and images may become unstable. Use high-quality DVI cables that are 5 m or shorter. When a DVI cable longer than 5 m is used, make use of a distribution system or an optical fiber cable.



### Caution on Devices to be Connected

Please refer to the list of 'Devices Compatible with this Product' on the front page for devices that can be connected with this unit. Performance of this unit will not be guaranteed if it is connected with a device not specified in the list.

## Setup of this Unit

1. Connect the supplied power cord to the power supply input terminal on this unit. Connect the earth wire to the equipped earth terminal in the building, followed by inserting the plug of the supplied power cord into the wall outlet.
2. This unit will be initialized once the plug of the power cord is inserted into the power outlet. Upon completion of initialization, this unit switches to the Standby mode (LED turns red).
3. Press the Power/Standby button on this unit (or Power button on the remote). Once the unit is turned on, the LED turns green.
4. Press the Menu button on the remote for 5 seconds or more to display the Setup Menu on this unit's display panel. After the Setup Menu is displayed, use the Function Up/Down keys on the remote to select an adjustment. Select the set values accordingly using the Value Left/Right keys on the remote.
5. Select Set: SCANRATE and set the value to 1920 x 1080. Press the STORE key on the remote. The message "Are You Sure" is displayed on the display panel of this unit. Press the STORE key on the remote again to set the scan rate.

6. Select Set: Active Output and set the value to Digital.
7. Select Set: Screen Shape and set the value to Wide Screen.
8. Press the Menu button on the remote to exit the Setup Menu.

## Profile Setting

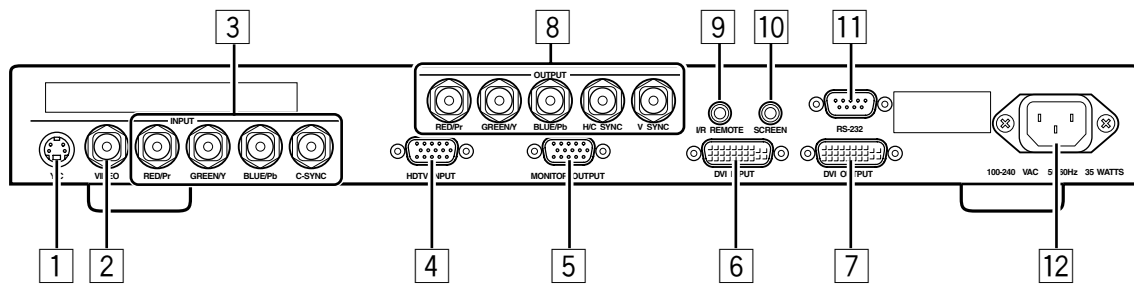
This unit can store up to 8 profiles. Each profile stores values that have been set for this unit during each adjustment. Select the profile number (1 - 8) at the OSD and press the STORE key on the remote to save the current settings. For further details, please refer to 'OSD'. (☞ Page 10)

## Video Image Adjustment

The following item can be adjusted according to the input signals. Adjusted values can also be stored in the profile.

- BRIGHTNESS (☞ Page 11)
- CONTRAST (☞ Page 11)
- COLOR (☞ Page 12)
- TINT (☞ Page 12)
- DETAIL (☞ Page 12)
- ADVANCED COLOR SYSTEM (☞ Page 12)

# INSTALLATION



## INSTALLATION

### Accessories

The following accessories are packed together with this unit. Please confirm all items. If any item is missing, please contact your dealer.

- Instructions
- Remote Control
- Power Cord
- AA/R6 size Battery (for operation confirmation)
- Guarantee

### Placement

The processor can be either placed on a table or rack mounted. A rack mounting installation kit is available. Securely mount the side rack brackets with the screws that are provided with the kit.

### Ventilation

The unit uses convection to cool. A fan is not needed. As hot air raises out of the top vent, cool air is drawn in from the bottom and side. These vents must not be blocked. When rack mounted, a minimum of 1.75" (1 rack unit height) of free space is required above and below the unit to allow for proper cooling. A forced air fan should be added to the rack installation if power amps are located in the same air space. Do not install unit above power amps.

### Connections

Because of the high performance of this unit it is very important to use the highest quality cables possible, for both input and output signals.

To avoid AC ground loop problems, the source equipment, this unit and projector should all be running on the same grounded AC power line (one rated for the power requirements).

- 1 S-Video input (4-pin DIN) for sources such as DVDs, Satellite systems, S-VHS tape decks (when using S-VHS tapes only), Hi-8 tape decks.
- 2 Composite video input (BNC) for sources such as Laserdisc players, cable TV, VHS tape decks, 8mm tape decks.

- 3 YPrPb/RGBs Input (BNC): 480i and HDTV scan rates are sent to the internal processor and then output at the selected scan rate. If the output is set to analog RGBHV or digital DVI, the unit will automatically transcode the YPrPb HDTV to RGBHV.

### Note on DVDs:

For proper aspect ratio and to insure the highest quality image from the DVD player, be sure to set the DVD screen shape to 16:9 in the DVD player's Setup menu. See the DVD player's owner's manual for details.

- 4 High scan rate input (D-sub15 pin) for sources such as HDTV signals or computers are passed through to the projector. The signal is sent to the outputs in the same format as the input unless Transcoding is selected. YPrPb from HDTV sources can be transcoded to RGBHV, as well. Use a BNC to D15 breakout cable if necessary. The Green, Red, Blue BNCs are used for YPrPb.
- 5 D-sub15 pin connector output for use with computer monitors or to a second display device. Use only short cable runs. This output can be used at the same time as the BNC outputs.
- 6 DVI Input. The DVI Input will automatically process 480p, 720p and 1080p signals. Computer rates are not supported for processing but may be passed through to the DVI output if any of the pass-through inputs are selected. This unit will not convert a computer DVI output to the analog output.

### Note



For incompatible input signals, a "Not Supported" message will be displayed on the LCD display and the image will be muted (black screen).

## Installation (continued)

7 DVI Output: Digital output interface for compatible displays. All processed analog and digital inputs are output to this connector as well as computer scan rates when the pass-through input is selected. Maximum cable length is 50ft with a high quality DVI cable. For longer lengths a distribution system or fiber optic system must be used.

8 BNC connectors for main output with RGBHV or YPrPb signals to display devices. Cable runs up to 100ft are okay if good quality cables are used. For YPrPb outputs use:  
 Red = Pr  
 Green = Y  
 Blue = Pb  
 RGBHV is recommended.

• If Computer signals are to be used, separate H & V sync cables must be connected to the display.

9 IR remote terminal  
 Cannot be used with this digital video processor.

10 SCREEN terminal  
 12V trigger to activate automatic screen relays. Voltage is constant when unit power is on.  
 In addition, refer to 'Precautions for using the screen terminal' on page 3 before using it.

11 RS-232C (D-sub 9 pin) terminal  
 RS-232C connection for use with RS-232C control systems.

12 AC Power connection.

### Note

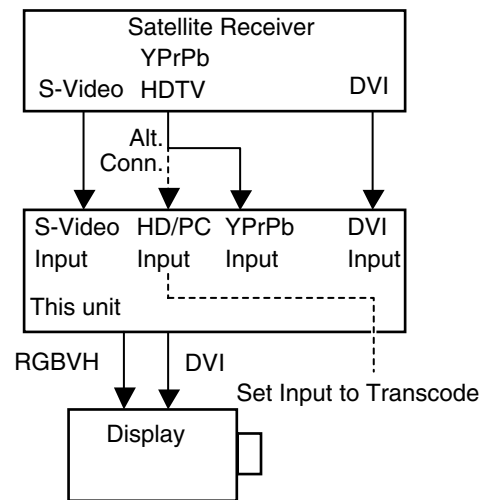
• The DVI or analog RGBHV outputs cannot be active at the same time. Select the output type in the Setup menu prior to use of the processor.

## Connecting HDTV Satellite Receivers

Since HDTV ready satellite receivers offer different signal types, they require special attention for connection to the processor. Every receiver is different so be sure to consult the receivers manual for details. For this manual, we will assume the receiver being used operates as follows:

1. Non HDTV material is output from the receiver via an S-video connection
2. HDTV material is output via YPrPb outputs
3. If available, HDTV material is also output via a DVI connector.

The following diagram offers one way to connect the system.



With this hookup viewing the different sources is as follows:

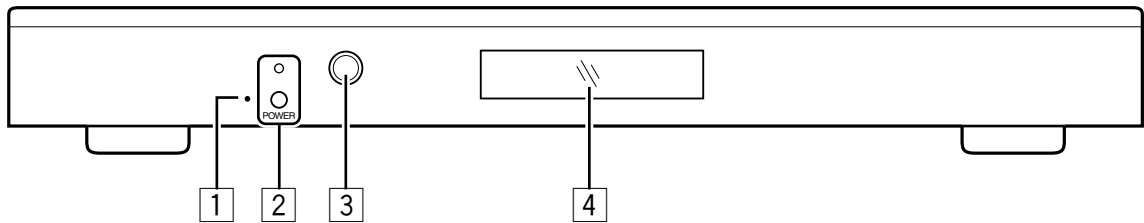
SOURCE	USE THIS UNIT'S INPUT	USE THIS UNIT'S OUTPUT
Non-HDTV Channels	S-Video	RGBHV or DVI
Native HDTV Channels	DVI	DVI or RGBHV
Native HDTV Channels	YPrPb	DVI or RGBHV
Native HDTV Channels with HDCP Encryption	YPrPb	RGBHV

• This unit's pass-through input will "pass" the input signal to the output stage in the same format as the input signal, i.e. analog HDTV in – analog HDTV out, DVI HDTV in – DVI HDTV out.

### HDTV Cross-Conversion

This unit can cross-convert 480p, 720p and 1080i HDTV signals to the selected output of the processor. Any HDTV signal connected to the YprPb BNC or DVI inputs will be cross-converted. Any HDTV or PC signal connected to the D15 input will be passed-through without processing. PC signals via the DVI input will be sent to the pass-through.

To pass-through HDTV signals to avoid processing, select the passthrough input. DVI is passed through to the DVI output and analog YPrPb is passed through as analog RGB (select transcode).



## FRONT PANEL CONTROL

### 1 Firmware Reset:

Push a small paper clip into this opening to reset the unit's CPU.

- Use this reset only if the unit will not respond to commands. It will not erase custom settings. Use the Factory Restore command in the Setup Menu to completely reset firmware. See the setup section of the manual for details.

### 2 Power / Standby:

Press to turn the unit On (LED turns Green) or to Standby (Red).

### 3 Infrared Receiver Window

### 4 LCD Readout:

Provides information on control of the processor. Displays current Function being used, matching the On-Screen-Display. When in the Setup Menu, the OSD is not available, use the LCD display.

## SYSTEM FIRMWARE SETUP

Now that all the sources and cables are connected, the processor's firmware needs to be setup for the installation. **Be sure to go through the Setup menu before doing the final setup of the display.**

When the unit is first plugged in it will go through an initializing procedure and display the output resolution. Do not send any commands to the unit during this initialization period. Once this initialization is completed the unit is instant-on.

### Note



All display devices have specific setup steps that must be completed to insure proper operation with this unit and other sources. Be sure to carefully follow those instructions as well as the instructions for this processor.

**To enter the Setup menu, press and hold the Menu button on the remote for five seconds. Setup Functions can only be viewed on the front panel LCD, not from the OSD.**

Press the Function Up or Down to select the available Functions. Press the Value Up or Down keys to change values or to select options.

## SETUP MENU FUNCTIONS

### SET : SCANRATE

Select the required scanrate by using the right and left arrows. When the desired rate is displayed on the LCD display, press the STORE key. This unit will ask you "Are you sure" and press the STORE key again. The scanrate is now selected.

### SET : ACTIVE OUTPUT

Analog / Digital (Default)

This must be selected to determine if the Analog (BNC) or Digital (DVI) output is used. Both outputs cannot be used at the same time.

### SET : SCREEN SHAPE

Wide Screen / 4:3 / Wide 4:3

- This sets the processor for the screen shape of the display to be used. If this is not set properly, the aspect ratio selection for the different sources located in the user menu will be incorrect.

### ■ WIDE SCREEN

Choose this when the screen is Widescreen and the projector will provide the anamorphic vertical squeeze.

Example : Example: A 16:9 plasma, a digital or CRT projector set to Anamorphic using a wide angle screen or when using a Panamorph lens, or a 1280x720 digital projector.

### ■ 4:3

Choose this when the projector is 4:3 and the screen is 4:3

Example : Using a 1024x768 digital projector on a 4:3 screen.

### ■ WIDE 4:3

Choose this when the digital projector operates as 4:3 and the screen is Widescreen. (Not available on units scanning at rates below 720p.)

Example : A digital projector that has a 4:3 display chip that locks the aspect ratio when sent the native resolution and then displayed on a wide angle screen.



## Setup (continued)

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### SET : BLACK LEVEL (For setting the black level)

7.5 IRE / 0 IRE (Default)

For setting the black signal level of the video signal. When the video signal is "7.5 IRE Setup", set to "7.5 IRE".

### SET : DVI Input Level (For setting the gray scale)

16-235 / 0-255 (Default)

### OUTPUT FORMAT (ANALOG)

RGB (Default) / YPrPb

Selecting RGB means connecting the processor to the display via five wire analog RGBHV. This function is not active when DVI output is selected. DVI is always RGBHV.

### COMPOSITE SYNC ON H

On / Off (Default)

- This function is not active when YPrPb output is selected.
- Each input on this unit can be activated or deactivated to simplify operation so unused inputs are not accessed when cycling through the inputs with the remote control.

### SET : VIDEO INPUT

Enabled (Default) / Disabled

- Disabling this unused input will remove it from the input menu list.

### SET : S-VIDEO INPUT

Enabled (Default) / Disabled

- Disabling this unused input will remove it from the input menu list.

### SET : RGB INPUT

Enabled (Default) / Disabled

- Disabling this unused input will remove it from the input menu list.

### SET : Y/Pr/Pb INPUT

Enabled (Default) / Disabled

- Disabling this unused input will remove it from the input menu list.

### SET : DVI INPUT

Enable / Disable

- Disabling this unused input will remove it from the input menu list.

### SET : PASSTHRU INPUT

Enabled (Default) / Disabled

- Disabling this unused input will remove it from the input menu list.

### SET : PASSTHRU TRANSCODE

Disable (Default) / Enable

YPrPb HDTV signals via the D15 input or the YprPb (BNC) inputs can be transcoded to RGB when this feature is enabled.

### SET : COMPONENT INPUT STANDARD

DVD (Default) / Professional (Betacam)

- Only use professional setting when using a device that conforms to SMTPE Betacam levels

### SET : RGB INPUT SYNC

Sync-on-Green (Default) / Composite Sync

### SET : DVI INPUT H SYNC (For setting the H Sync)

Normal (Default) / Wide

### SET : OSD (ON SCREEN DISPLAY)

On (Default) / Off

### SET : OSD TIMER

0-255 (30 Default)

### SET : LCD TIMER

6-255 (40 Default)

- Setting value below 5 will not be displayed. "ALWAYS ON" is displayed on the LCD display and the backlight is always lit.

### SET : RS232 ECHO

On (Default) / Off

Allows RSR232 characters to be sent back to the controller.

### SET : BAUD RATE (For setting the baud rate of RS-232C)

19200 (Default) / 57600 / 9600

### SET : Store NTSC profiles 1-8

### SET : Store PAL profiles 1-8

### SET : RESTORE FACTORY

Are You Sure? - Press Enter Key

**Use this Function only in the event that the processor no longer functions properly and all other system checks have been performed. This command will erase all custom settings and restore the original firmware configuration. Be sure to go back through the Setup procedure for proper operation.**

#### Note



The next step in the setup procedure is to align the display device. Be sure to follow all directions for setting up the display found in the display's manual. Using a test DVD with the Safe Area test pattern, align the image size, position and blanking first using the controls found in the display device. Only use these controls in this unit if the display device does not offer these controls or if there is not enough range.

# IR REMOTE/OSD

## IR REMOTE AND OSD OPERATION

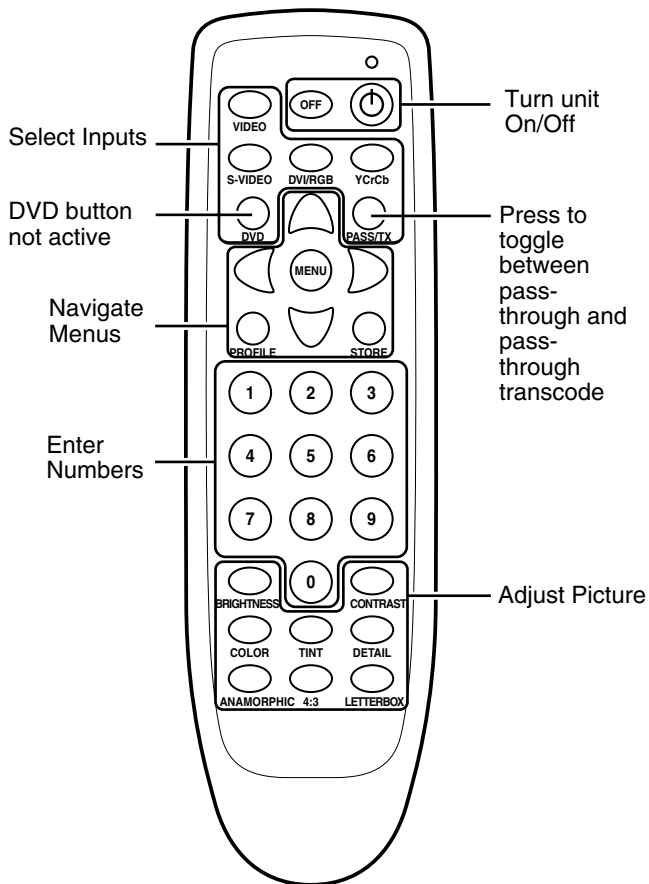
This unit is now shipped with a simplified remote control that allows for direct access to most commands used to control the processor.

Adjustments can be made three different ways:

1. Press the Menu button to activate the OSD and use the Function and Value keys to make changes. Press Menu again to remove OSD.
2. Press the direct access key (Brightness, etc.) and then adjust using the left/right value keys.
3. Press the direct access key and then enter a three digit number (i.e. 040 for 40).
4. For direct access to the RGB input:

Press DVI + 1

(allow about one second between commands)

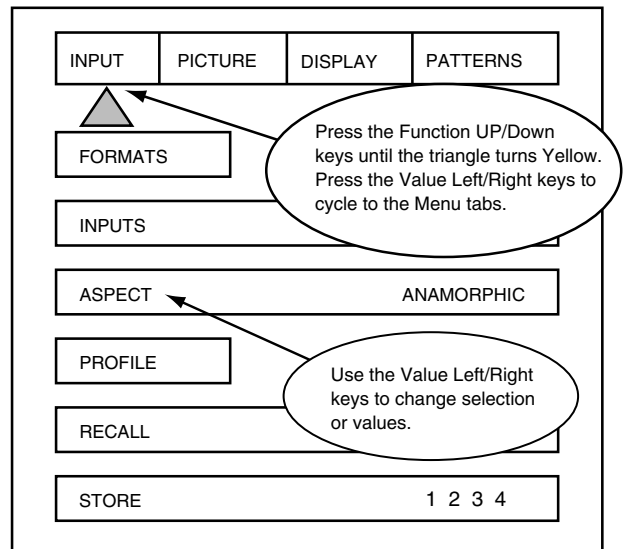


## ON SCREEN DISPLAY (OSD)

Accessing the OSD

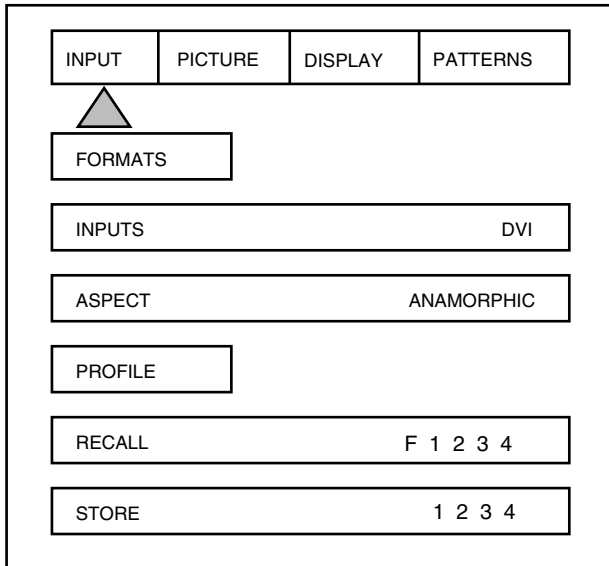
1. **Press Menu button to bring up main Index.**
2. **Use Function Up/Down Keys until the triangle at the top of the OSD turns yellow.**
3. **Use the Left/Right keys to move to the next menu page. A list of available Functions will appear.**
4. **Press Function Up/Down keys to select an adjustment.**
5. **Use Value Left/Right keys to adjust.**  
The main menu drops away and a single line menu appears.
6. **Use the Function keys to return to the drop down menu.**
7. **Press Menu at any time to cancel OSD**

- Unused inputs can be deactivated for simpler operation of the processor. See the Setup instructions for details.



The OSD consists of four menu tabs:  
**Input - Picture - Display - Patterns**

## Input Menu



### Formats

1. Input Select: OSD  
Video-S-Video- RGB-YCrCb-DVI
  - The Pass-Thru input cannot be selected from the OSD since an OSD is not available on that input. Use the Input button on the remote to select it. The DVI Input will not display an OSD unless there is a source connected to it.
2. Aspect Ratio  
4:3-Letterbox-Anamorphic
  - This selection should match the aspect ratio of the source, not the display. The aspect ratio of the display should be selected in the Setup menu.

### Profiles

1. Profile: Factory-1-2-3-4-5-6-7-8
2. Store: 1-2-3-4-5-6-7-8

#### To store a Profile (in the Input Menu):

1. Press Menu button on the remote
2. Make all required adjustments.
3. Use the Function Up/down keys to select Profile
4. Use the Value Left/Right keys to select Profile
5. Press Enter

#### To recall a Profile (in the Input menu):

1. Press Menu button on the remote
2. Use the Function Up/Down keys to select Recall
3. Use the Value Left/Right keys to select profile 1-8
4. Press Store
5. There are separate banks of eight Profiles for NTSC and PAL

- When using a 4:3 source on a Wide Angle screen there are black bars on the left and right of the image. The sidebars can be changed to gray using the Blanking Level control located in the Display menu. If filling the entire screen is desired, select Letterbox. The image will fill the screen but the top and bottom 1/3 of the image will be cut off (overscanned).

When watching 2:35 aspect ratio movies on a 16:9 (1:77) screen, it is normal to see black bars at the top and bottom of the image.

- The screen shape used in the installation must be set in the Setup Menu during installation for proper Aspect Ratio mapping. Anamorphic Aspect Ratio with 4:3 screens and the Wide-4:3 settings are not available on units with scan rates, 540p, 600p and Frame Doubling. See Setup section for details.

### Note

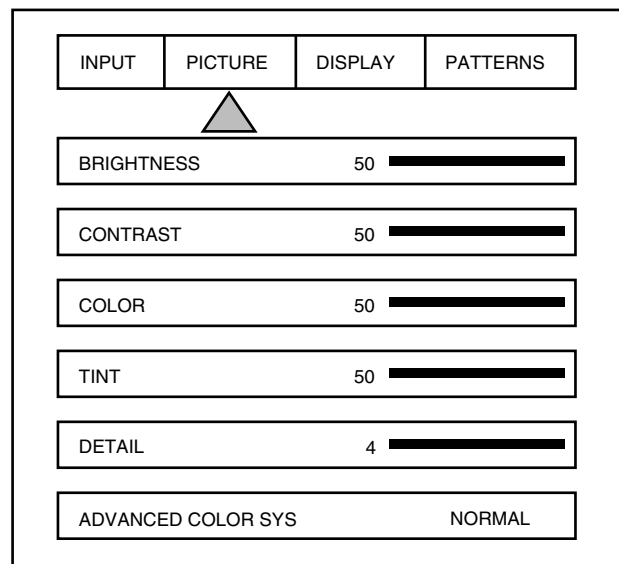


**Do not leave the 4:3 image with a Wide Angle screen on for long periods of time on a projector or plasma display. This can cause permanent image burn-in. Image burn-in is not covered by warranty**

## Picture Menu

Use these commands to fine-tune the image.

- After tuning the image, if the power is turned off without storing the profile, the factory default value will be restored.



### Brightness

Factory 50  
Adjust the brightness of the picture image.

### Contrast

Factory 50  
Adjusts the contrast of the picture image.

## Color

Factory 50

Adjust the color density of the picture image.

## Tint

Factory 50

Tint is not available with YPrPb or PAL sources

## Detail

Factory 4

- The Detail circuit is a powerful tool for image quality. The settings have been optimized for the output scan rate and resolution. However, the viewer's tastes plus the types of software and display require making adjustments of this setting to fine-tune the image. This control is very effective to increase detail in poor quality video material. It is recommended that adjustments be made in small increments until the desired results are achieved and then store these custom settings in the Profiles. It is important to not use too much Detail since the image will start to look artificial. Typically, digital displays will need less detail than analog displays. High quality software will need less detail than poor quality ones. Reducing the Detail level can help to reduce the visibility of MPEG artifacts on some DVDs and satellite systems and noise with VHS tapes. The best results are achieved by adjusting the levels to the software being viewed instead of just using test patterns.

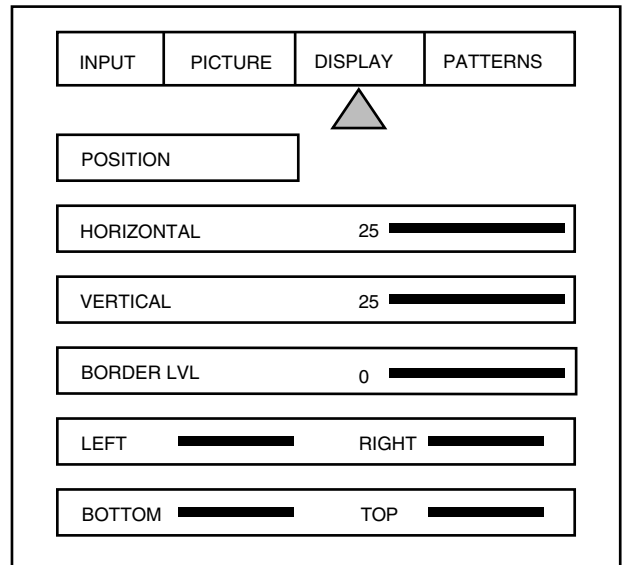
## Advanced Color System

Normal (Default) / Bypass

For some DVDs with computer animation or with very high levels of color, the chroma edge processing circuits may not be needed and can be turned off (Bypass). For most sources, the Normal setting should be selected. These settings can be stored as a Profile.

- Any changes to the picture level adjustments are automatically stored after one minute has passed without making any changes. This information is stored separately for each input. As each input is selected the last used settings will automatically be recalled. If picture levels are adjusted but then the input is changed before one minute has passed, the changes for that input will not be stored and the previous settings will be recalled the next time that input is used.

## Display Menu



Use these commands to adjust the image position and edge blanking. It is recommended to adjust sizing, position and blanking in the display device first with this unit in the Factory preset setting. Then use this unit's controls only if the display runs out of range or does not offer these controls. This should be done by a qualified technician.

### Horizontal Position

Not functional on this unit.

### Vertical Position

Not functional on this unit.

### Border LVL (Blanking level)

Setting Values: 0-100

This adjusts the blanking from black to white. This can be used to create a gray side bar for use with 4:3 aspect ratio sources on wideangle screens to help reduce the chance of image burn-in. Image burn in is not covered by warrantee.

### Left

Adjusts the left edge border (blanking).

### Right

Adjusts the right edge border (blanking).

### Bottom

This adjusts the bottom edge border (blanking).

### Top

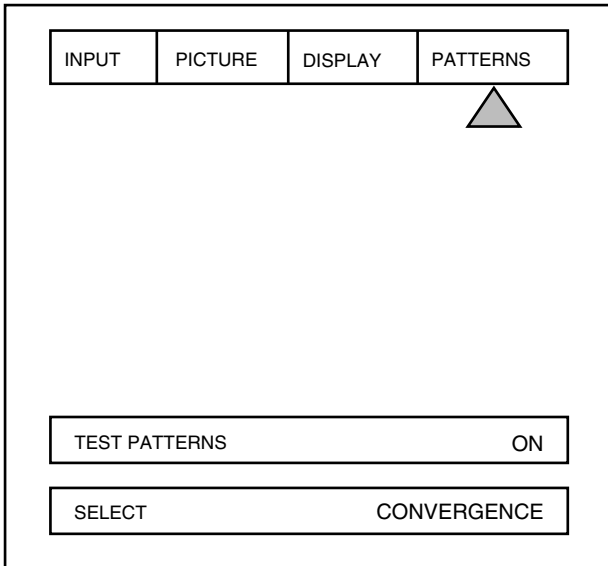
Adjusts the top edge border (blanking).

- This unit will store unique blanking settings for each aspect ratio which are automatically stored and recalled when the different aspect ratios are selected

## ■ Patterns Menu

The best approach to system setup is to use a DVD that offers the proper test patterns. This way, the system is aligned for the entire signal path. If a test DVD is not available, then use the internal test patterns provided in this unit.

- The test pattern generator in this unit is set to SMPTE standards. To insure proper output levels for display setup, the picture controls in this unit cannot be accessed when the test patterns are being used. Adjust levels, if needed, in the display device.



## AVAILABLE PATTERNS

<b>Gray Step</b>	: Check gray scale
<b>Cb Ramp</b>	: Check linearity of Cb channel
<b>Cr Ramp</b>	: Check linearity of Cr channel
<b>Y Ramp</b>	: Check linearity of Y channel
<b>Black</b>	: Full Black screen
<b>Green Screen</b>	: Check for defective pixels
<b>Red Screen</b>	: Check for defective pixels
<b>Blue Screen</b>	: Check for defective pixels
<b>Convergence</b>	: Check convergence of display
<b>Border</b>	: Use for H&V positioning
<b>Multiburst</b>	: To check bandwidth
<b>Window</b>	: Check displays power supply
<b>PLUGE</b>	: Set Brightness and Contrast
<b>Color Bars</b>	: Color bars for decoder check
<b>Rev Bars</b>	: Color bars for decoder check

## RS232 INSTRUCTIONS

<b>Connector</b>	: DB-9 Female
<b>Baud rate</b>	: 19,200 default, 8 bit, 1 stop bit and No Parity
<b>Pin Configuration</b>	: Pin 5=Ground Pin 3=RX in Pin 2=TX out

All commands are sent using ASCII text strings.

- A command must start with the string header

## RS232 (continued)

Following the header, a comma is used to delimit the header from the command. All the commands with their descriptions are listed below. All the text strings are terminated with a carriage return (0x0d or 13). Maximum command string length is 250 characters.

OPERATION COMMANDS (Used for day-to-day operation)		
COMMAND	OPTIONS OR RANGE	DESCRIPTION
A#	(0-2) 0=4x3, 1=Letterbox, 2=Anamorphic	Input Aspect Ratio – for all sources
B#	(0-170) 128 default	Brightness
C#	(0-155) 110 default	Contrast
D#	(0-13) 8 default	Detail
DVI		DVI Input
EXT		Pass-through Input
FST		Report Current System Status
HELP		Displays full list of commands for this unit
K#	(0-220) 128 default	Color
OFF		Power OFF
ON		Power ON
P#	(0-8) [1-8=User, 0=Factory]	Recall Preset
PM#	(0-1) [0=Normal1=Bypass]	Advanced Color System
PY		PassThru Transcoded Input
R		RGB input
ST		Report Current Status
T#	(0-255) 128 default	Tint
TP#	0=Off 1=100% Color Bars 2=Reverse Color Bars 3=10-step Grayscale 4=Luma Ramp 5=Cb Ramp 6=Cr Ramp 7=Green 8=Red 9=Blue 10=Convergence 11=Active Boarder 12=Multiburst 13=100% Window 14=PLUGE Test Pattern Selection	
TPHELP		Display Test Pattern Help
V		Video input
X		YCrCb input
Y		S-Video input

### SETUP COMMANDS (Normally not controlled by RS232)

COMMAND	OPTIONS OR RANGE	DESCRIPTION
BB#	(0-192)	Bottom Blanking
BL#	(0-252)	Border Level – black to white
BLT#	(0-255)	LCD Backlite Timer on front panel
CS#	1=On 0=OFF	Composite Sync – for RGB output
DVD		DVI Input Disabled
DVE		DVI Input Enabler
E#	1=On 0=OFF	RS-232 ECHO
EXTD		PassThru Input Disabled
EXTE		PassThru Input Enabled
HP#	(0-50) 25 default	Horizontal Position
LB#	(0-200)	Left Blanking
M#	(0-1) [0=RGB, 1=YPrPb]	Output Mode
OSDOFF		OSD Off – for processor
OSDON		OSD On – for processor
OUTMOD	0=Analog, 1=Digital	Output Mode
PYD		PassThru Transcode Disable
PYE		Pass-Thru Transcoder Enabled
RB#	000-192	Right Blanking
RD		RGB Input Disabled
RE		RGB Input Enabled
SETFT		Restore Factory Defaults
STPP#	1-8	Store PAL Profile
STNP#	1-8	Store NTSC Profile
SRHELP		Scan Rate Help Table
TB#	000-192	Top Blanking
VD		Video Input Disabled
VE		Video Input Enabled
VPOL#	(0=Neg 1=Pos)	Vsync Polarity
W#	0=4:3, 1=Widescreen, 2=Wide 4:3	Screen Shape
XD		YCrCb Input Disabled
XE		YCrCb Input Enabled
YD		S-Video Input Disabled
YE		S-Video Input Enabled

### NTSC SCAN RATE LIST (USE ONLY BY QUALIFIED TECHNICIAN!)

SRN2	1920 x 540	SRN3	800 x 600
SRN4	1280 x 720	SRN5	1024 x 768
SRN6	1280 x 768	SRN7	1366 x 768
SRN8	1440 x 960	SRN9	1280 X 1024
SRN10	D-ILA	SRN11	1400 x 1050
SRN12	1920 x 1080		

### PAL SCAN RATE LIST (USE ONLY BY QUALIFIED TECHNICIAN!)

SRP1	720x576/50Hz	SRP3	1024x768/75Hz
SRP2	1280x720/50Hz	SRP4	1920x1080/50Hz

# HELP MENUS

## TEST PATTERN HELP MENU

TP0	TEST PATTERN OFF	TP1	100% COLOR BARS
TP2	REVERSE COLOR BARS	TP3	10 STEP GREY
TP4	LUMA RAMP	TP5	CB RAMP
TP6	CR RAMP	TP7	BLACK SCREEN
TP8	GREEN SCREEN	TP9	RED SCREEN
TP10	BLUE SCREEN	TP11	CONVERGENCE
TP12	ACTIVE BORDER	TP13	SMPTE PATTERN
TP14	WHITE WINDOW	TP15	PLUGE

Output Scan Rate	Horizontal Frequency	Vertical Frequency
1920 x 540P	33.8 KHz	59.94 Hz
720 x 576P	31.3 KHz	50.00 Hz
800 x 600P	37.6 KHz	59.94 Hz
1280 x 720P	45.0 KHz	59.94 Hz
1280 x 720P	37.5 KHz	50.00 Hz
1024 x 768P	60.5 KHz	75.00 Hz
1024 x 768P	48.3 KHz	59.94 Hz
1366 x 768P	48.3 KHz	59.94 Hz
1440 x 960P	62.9 KHz	59.94 Hz
1280 x 1024P	63.9 KHz	59.94 Hz
1365 x 1024P	63.5 KHz	59.94 Hz
1400 x 1050P	64.0 KHz	59.94 Hz
1920 x 1080P	56.3 KHz	50.00 Hz
1920 x 1080P	67.4 KHz	59.94 Hz



# SPECIFICATIONS

■ <b>Model Name/ Article Name</b>	LD-HD2KU/LD-HD2KE Digital Video Processor																																				
■ <b>Colour System</b>	NTSC, PAL (Auto switching)																																				
■ <b>Video Input</b>	<table border="1"> <thead> <tr> <th>Signal</th> <th>Horizontal Frequency</th> <th>Vertical Frequency</th> </tr> </thead> <tbody> <tr> <td>480i</td> <td>15.7 KHz</td> <td>29.97 Hz</td> </tr> <tr> <td>480p</td> <td>31.5 KHz</td> <td>59.97 Hz</td> </tr> <tr> <td>576i</td> <td>15.6 KHz</td> <td>25.00 Hz</td> </tr> <tr> <td>576p</td> <td>31.3 KHz</td> <td>50.00 Hz</td> </tr> <tr> <td>720p</td> <td>37.5 KHz</td> <td>50.00 Hz</td> </tr> <tr> <td>720p</td> <td>45.0 KHz</td> <td>59.97 Hz</td> </tr> <tr> <td>1080i</td> <td>28.1 KHz</td> <td>25.00 Hz</td> </tr> <tr> <td>1080i</td> <td>33.7 KHz</td> <td>29.97 Hz</td> </tr> </tbody> </table>	Signal	Horizontal Frequency	Vertical Frequency	480i	15.7 KHz	29.97 Hz	480p	31.5 KHz	59.97 Hz	576i	15.6 KHz	25.00 Hz	576p	31.3 KHz	50.00 Hz	720p	37.5 KHz	50.00 Hz	720p	45.0 KHz	59.97 Hz	1080i	28.1 KHz	25.00 Hz	1080i	33.7 KHz	29.97 Hz									
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■ <b>Input Terminals</b>																																					
<b>VIDEO</b>	1-line, BNC x 1    1.0 Vp-p																																				
<b>Y/C</b>	1-line, mini-DIN 4 pin x 1            Y: 1.0 Vp-p, C: 0.286 Vp-p																																				
<b>R,G,B,C-SYNC</b>	1-line, BNC x 4    R,G,B: 0.7 Vp-p    C-SYNC: 1.0 Vp-p																																				
<b>Y, Pr, Pb</b>	1-line, BNC x 3    Y: 1.0 Vp-p    Pr, Pb: 0.7 Vp-p																																				
<b>DVI</b>	1-line, DVI-D 24 pin, HDCP-compatible																																				
<b>HDTV</b>	1-line, D-sub 15 pin <table border="1"> <thead> <tr> <th>Pin No.</th> <th>Signal Name</th> <th>Pin No.</th> <th>Signal Name</th> <th>Pin No.</th> <th>Signal Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Red, Pr</td> <td>6</td> <td>GND</td> <td>11</td> <td>–</td> </tr> <tr> <td>2</td> <td>Green, Y</td> <td>7</td> <td>GND</td> <td>12</td> <td>–</td> </tr> <tr> <td>3</td> <td>Blue, Pb</td> <td>8</td> <td>GND</td> <td>13</td> <td>H-sync</td> </tr> <tr> <td>4</td> <td>–</td> <td>9</td> <td>–</td> <td>14</td> <td>V-sync</td> </tr> <tr> <td>5</td> <td>GND</td> <td>10</td> <td>GND</td> <td>15</td> <td>–</td> </tr> </tbody> </table>	Pin No.	Signal Name	Pin No.	Signal Name	Pin No.	Signal Name	1	Red, Pr	6	GND	11	–	2	Green, Y	7	GND	12	–	3	Blue, Pb	8	GND	13	H-sync	4	–	9	–	14	V-sync	5	GND	10	GND	15	–
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5	GND	10	GND	15	–																																
<b>RS-232</b>	1-line, D-sub 9 pin, RS-232C (External control)																																				
■ <b>Output Terminals</b>																																					
<b>R,G,B,H/C-SYNC,V</b>	1-line, BNC x 5    R,G,B: 0.7 Vp-p/75 Ω, H/C-SYNC, V: 4.5 V/2 KΩ																																				
<b>Y, Pr, Pb</b>	1-line, BNC x 3    Y: 1.0 Vp-p, Pr, Pb: 0.7 Vp-p																																				
<b>MONITOR</b>	1-line, D-sub 15 pin R,G,B,Pr, Pb: 0.7 Vp-p/75 Ω, Y: 1.0 Vp-p, H, V : 4.5 V/2 KΩ																																				
<b>DVI</b>	1-line, DVI-D 24 pin, HDCP-compatible																																				
<b>SCREEN</b>	1-line, mini-jack (+12 VDC Screen trigger, 100mA) (Tip=V+, Case=GND)																																				
■ <b>Power Requirements</b>	AC 100 V - 240 V, 50 Hz/60 Hz, Power consumption 1.0 A																																				
■ <b>Operation Environment</b>	Temperature    41°F to 95°F (+5 °C to +35 °C) Humidity        20% to 80% (No condensation) Storage Temperature 14°F to 140°F (–10 °C to +60 °C)																																				
■ <b>Dimensions</b> (Width x Height x Depth)	Approx. 1 <sup>3</sup> / <sub>4</sub> " x approx. 17" x approx. 11 <sup>4</sup> / <sub>5</sub> " (Approx. 45 mm x 438 mm x 303 mm) (Excluding carrying handle, lens and protrusion portion)																																				
■ <b>Mass</b>	Approx. 13.9 lbs (Approx. 6.3 kg)																																				
■ <b>Accessories</b>	(☞ Page 6)																																				

- Design and specifications are subject to change without prior notice.
- Please note that some of the pictures and illustrations may have been abridged, enlarged or contextualized in order to aid comprehension. Images may differ from the actual product.





