



OWNER'S OPERATING MANUAL

PlasmaWall™

PL-43DHD

PL-50DHD

Flat Panel Display Monitor

with WideVision™

and Digital High Definition™ Controller with Vivix II™ Technology



THE WORLD'S FINEST HOME THEATER PRODUCTS™

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INTRODUCTION

The PL-43DHD and PL-50DHD are actually a two-piece system - the plasma panel and the DHD™ controller with VivixII™ video processing. The digital high definition DHD™ controller is a digital scaler that converts NTSC Video, S-Video or Component video to 720p, whether it is the PL-43DHD at 1024 x 768 or the PL-50DHD at 1280 x 768. Typically, fixed pixel devices provide a much more resolved and artifact-free image when they are fed a progressive signal matched to the display's native resolution - which is exactly what the DHD™ controller does. It also simplifies the operation of the system, as all image adjustments (including aspect ratio control) and video switching are done at the DHD™ controller, not at the plasma level.

This manual will explain how to use your PL-43DHD/PL-50DHD plasma display, as well as its features, benefits and other important information. Please ensure you read this manual carefully before using your PL-43DHD/PL-50DHD, especially the safety precautions!

Features and Benefits

- 1024 x 768 (PL-43DHD) and 1280 x 768 (PL-50DHD) HDTV resolution with 16:9 aspect ratio
- Designed for custom automation control with RS-232C and IR interfaces
- Accepts all DTV formats
- Multiple aspect ratio control
- Less than 4 1/2 inches thin
- Digital 480P, 720P, 1080i input via DVI w/HDCP
- Advanced DHD™ Digital High Definition Video Controller/Processor

High Altitude Operation

Due to the design of all plasma glass panels made by every manufacturer, and the interaction between ambient air pressure and the plasma gases contained inside of the panel, reliable operation of your plasma display cannot be assured during operation at certain high altitude locations.

We have found this plasma monitor to be reliable at altitudes of up to 5000 MSL (mean sea level). At elevations higher than this, each panel may react differently, depending upon the altitude, air pressure, humidity and other meteorological factors.

For this reason, Runco International makes no warrants or claims as to the reliable operation of this plasma display monitor product at altitudes greater than 5000 feet above sea level.

If you are planning to operate a plasma monitor at a location above 5000 feet, please contact Runco technical support for further information.

WARNINGS AND SAFETY PRECAUTIONS

CAUTION:

To turn off main power, be sure to remove the plugs from power outlets. The power outlet socket should be installed as near to the equipment as possible, and should be easily accessible.

REMARQUE:

Pour mettre l'appareil hors circuit, s'assurer de retirer la fiche de la prise d'alimentation. La prise d'alimentation doit être installée aussi proche que possible de l'appareil et doit être facile d'accès.

WARNING

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO DO NOT USE THIS UNIT'S POLARIZED PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS, UNLESS THE PRONGS CAN BE FULLY INSERTED. REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH-VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

AVERTISSEMENT

POUR EVITER UN FEU OU UN RISQUE D'ELECTROCUTION NE PAS EXPOSER CET ENSEMBLE A LA PLUIE OU A L'HUMIDITE; DE MEME, NE PAS BRANCHER LA PRISE POLAIRE AVEC UNE RALLONGE A MOINS QUE LES DENTS DE LA PREMIERE NE S'Y INSERENT PLEINEMENT. EVITER D'OUVRIR LE COFFRET CAR IL Y A, A L'INTERIEUR, DES COMPOSANTS SOUMIS A UNE HAUTE-TENSION; POUR LES REPARATIONS, S'ADRESSER A UN PERSONNEL QUALIFIE.

WARNING

This equipment has been tested and found to comply with the limits for a Class 'B' digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference 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 Installation Manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case, the user will be required to correct the interference at his own expense.

DOC compliance Notice

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

DOC avis de conformation

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le Matériel D'interférence du Canada.

SAFETY TIPS

Please read and follow the safety precautions listed below to ensure the equipment is free from damage, and to ensure that no injury will occur as a result of improper use.

- Do not insert any object, especially metal or liquids, into the Plasma display.
- Do not place any objects containing water or any other liquid on top of the Plasma display.
- Do not place the units in direct sunlight, near heaters or in extremely dusty or humid locations.
- Do not install this system outdoors or otherwise exposed to the elements.
- Do not place heavy objects on top of the Plasma display.
- If the power cord is damaged or frayed in any way, electrical shock and/or fire may result. Do not place objects on the power cord, and keep the cord away from heat-emitting devices. Should the power cord become damaged in any way, please contact your Runco Dealer for a replacement cord.
- Do not remove the cover of the Plasma display for any reason. If any problems arise with the unit, please contact a Runco Dealer or Runco International for service. Removing the covers will void the warranty.

LIMITED WARRANTY

Congratulations on your purchase of a Runco International video product and welcome to the Runco family! We believe Runco produces "The World's Finest Home Theater Products". With proper installation, setup and care, you should enjoy many years of unparalleled video performance.

This is a LIMITED WARRANTY as defined in the Magnuson-Moss Warranty Act. Please read it carefully and retain it with your other important documents.

WHAT IS COVERED UNDER THE TERMS OF THIS LIMITED WARRANTY:

SERVICE LABOR: Runco will pay for service labor by a Runco Authorized Service Center when needed as a result of a manufacturing defect for a period of three (3) years from the effective date of delivery to the end user (excluding the plasma glass panel).

PARTS: (Not including plasma glass panel) Runco will provide new or rebuilt replacement parts for the parts that fail due to defects in materials or workmanship for a period of three (3) years from the effective date of delivery to the end user. Such replacement parts are then subsequently warranted for the remaining portion (if any) of the original warranty period.

PLASMA GLASS PANEL: Runco will pay for service labor by a Runco Authorized Service Center when needed as a result of a manufacturing defect for a period of one (1) year from the effective date of delivery to the end user. In addition, Runco will provide new or rebuilt replacement parts for the parts that fail due to defects in materials or workmanship for a period of one (1) year from the effective date of delivery to the end user. Such replacement parts are then subsequently warranted for the remaining portion (if any) of the original warranty period.

WHAT IS NOT COVERED UNDER THE TERMS OF THIS LIMITED WARRANTY:

Image burn-in on plasma display panels are specifically excluded from coverage under this Limited Warranty. Image burn-in is the result of misuse of the product and therefore cannot be repaired under the terms of this Limited Warranty.

TO AVOID IMAGE BURN-IN:

Please ensure that still images are left on your plasma display panel for no more than a few minutes. Also ensure that images displayed in the 4:3 aspect ratio mode (black or gray stripes, but no picture information is present on the left and right edges of the screen) are used as infrequently as possible. This will prevent permanent image burns on your plasma display panel, which can be seen permanently under certain conditions once burn-in has occurred.

The types of images to avoid include video games, still images and computer screens with stationary tool bars and icons. (This is why computers are equipped with screen savers – to prevent still images from burning into the monitor's phosphors after being displayed continuously for an extended period of time).

Normal viewing material such as television/satellite broadcasts, videotape or DVDs (not put into pause for extended periods of time) will not cause damage to your display under normal conditions. Many DVD players are also equipped with screen savers for this reason.

**IMPORTANT: RUNCO IS NOT RESPONSIBLE FOR IMAGE BURNS ON ANY DISPLAY.
PLEASE EXERCISE CAUTION WHEN USING A 4:3 IMAGE ON A 16:9 SCREEN.**

This Limited Warranty only covers failure due to defects in materials and workmanship that occur during normal use and does not cover normal maintenance. This Limited Warranty does not cover cabinets or any appearance items; failure resulting from accident, misuse, abuse, neglect, mishandling, misapplication, faulty or improper installation or setup adjustments; improper maintenance, alteration, improper use of any input signal; damage due to lightning or power line surges, spikes and brownouts; damage that occurs during shipping or transit; or damage that is attributed to acts of God. In the case of remote control units, damage resulting from leaking, old, damaged or improper batteries is also excluded from coverage under this Limited Warranty.

CAUTION: THIS LIMITED WARRANTY ONLY COVERS RUNCO PRODUCTS PURCHASED FROM RUNCO AUTHORIZED DEALERS. ALL OTHER PRODUCTS ARE SPECIFICALLY EXCLUDED FROM COVERAGE UNDER THIS LIMITED WARRANTY. MOREOVER, DAMAGE RESULTING DIRECTLY OR INDIRECTLY FROM IMPROPER INSTALLATION OR SETUP IS SPECIFICALLY EXCLUDED FROM COVERAGE UNDER THIS LIMITED WARRANTY.

RIGHTS, LIMITS AND EXCLUSIONS:

Runco limits its obligations under any implied warranties under state laws to a period not to exceed the warranty period. There are no express warranties. Runco also excludes any obligation on its part for incidental or consequential damages related to the failure of this product to function properly. Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of incidental or consequential damages. So the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

EFFECTIVE WARRANTY DATE:

This warranty begins on the effective date of delivery to the end user. For your convenience, keep the original bill of sale as evidence of the purchase date.

IMPORTANT: WARRANTY REGISTRATION:

Please fill out and mail your warranty registration card. It is imperative that Runco knows how to reach you promptly if we should discover a safety problem or product update for which you must be notified.

CONTACT A RUNCO AUTHORIZED SERVICE CENTER TO OBTAIN SERVICE:

Repairs made under the terms of this Limited Warranty covering your Runco video product will be performed at the location of the product, during usual working hours, providing location of product is within normal operating distance from a Runco Authorized Service Center. In some instances it may be necessary for the product to be returned to the Runco factory for repairs. If, solely in Runco's judgment, location of product to be repaired is beyond normal operating distance of the closest Runco Authorized Service Center, or the repair requires the unit be returned to the Runco factory, it is the owner's responsibility to arrange for shipment of the product for repair. These arrangements must be made through the selling Runco Dealer. If this is not possible, contact Runco directly for a Return Authorization number and shipping instructions. Runco will return product transportation prepaid in the United States, unless no product defect is discovered. In that instance, shipping costs will be the responsibility of the owner.

ADDITIONAL INFORMATION:

To locate the name and address of the nearest Runco authorized service location, or for additional information about this Limited Warranty, please call or write:

RUNCO INTERNATIONAL
Attn: Customer Service Department
2900 Faber Street
Union City, CA 94587
Ph (510) 324-7777
Fax (510) 324-9300
Toll Free 1-800-23-RUNCO

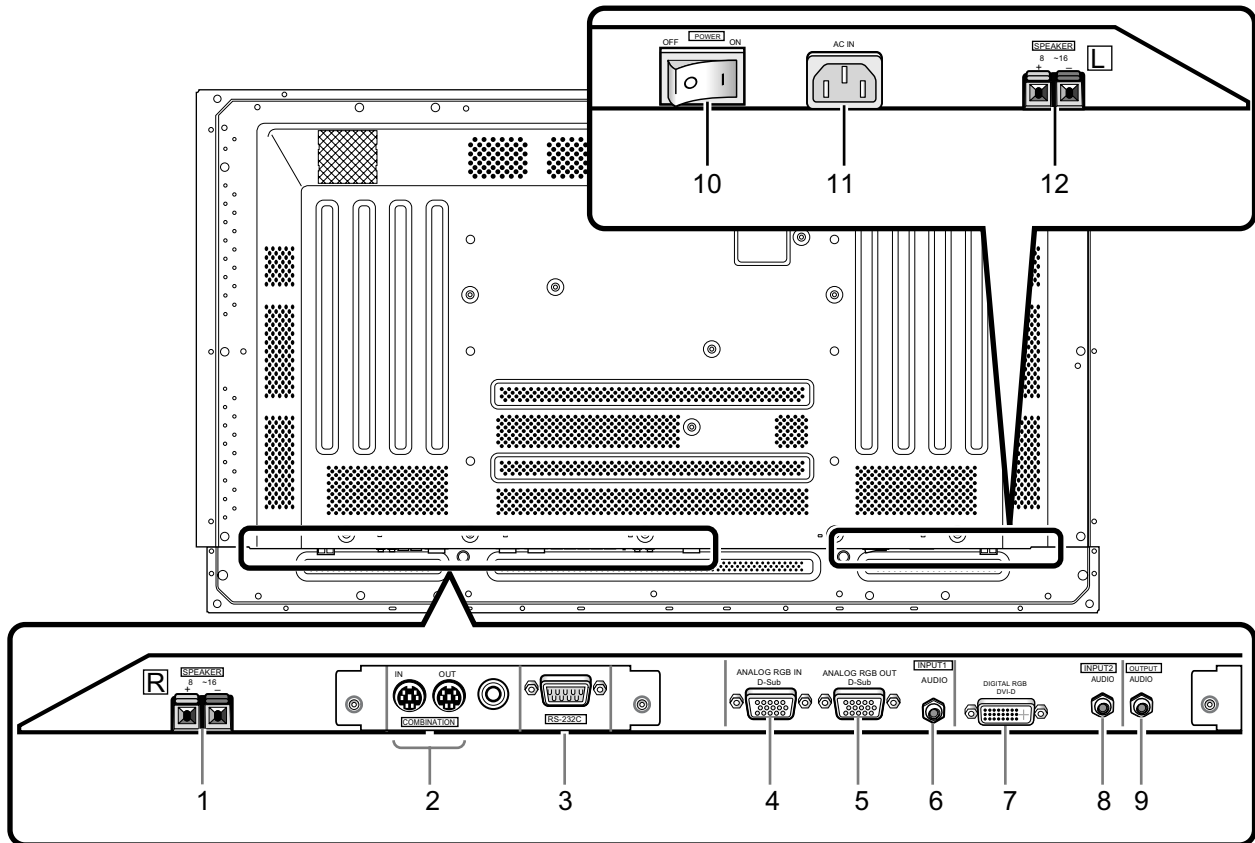
General Overview

The Runco PL-43DHD and PL-50DHD are a plasma panel systems with the flat panel plasma displays and an external DHD™ controller for video processing. With 1024 x 768 native resolution for the PL-43DHD and 1280 x 768 native resolution for the PL-50DHD, both are capable of imaging native HDTV. The PL-43DHD and PL-50DHD includes two DVI digital inputs as well as standard analog inputs.

Quick Setup Instructions

1. Install the Plasma display. This could be either table mount or wall mount configurations.
2. Connect the video interconnections between the output of any media source (such as DVD players or satellite receivers, or a DTV or computer source) and the input of the plasma display.
3. Plug in AC power to the Plasma display, and turn the plasma on.
4. Select the desired source on the remote control and the source should now be displayed on the plasma. If it is not, please check the wiring.

INPUTS AND CONTROLS



1 SPEAKER (R) terminal

For connection of an external right speaker. Connect a speaker whose impedance is 8 -16 Ω .

2 COMBINATION IN/OUT

Used when number of sets are controlled collectively. Use a mini DIN 6 pin cable (straight, fully connected).

3 RS-232C

This is used for serial integration with automation systems.

4 ANALOG RGB IN (INPUT1) (mini D-sub 15 pin)

RGB input from the DHD™.

5 ANALOG RGB OUT (INPUT1) (mini D-sub 15 pin)

Use the ANALOG RGB OUT (INPUT1) terminal to output the video signal to an external monitor or other component.

NOTE: the video signal will not be output from the ANALOG RGB OUT (INPUT1) terminal when the main power of this display is off or in standby mode.

6 AUDIO (INPUT1) (Stereo mini jack)

Use to obtain sound when INPUT1 is selected. Connect this jack to the audio output connector of the device connected to the plasma display's INPUT1.

7 DIGITAL RGB (INPUT2) (DVI-D jack)

Use to connect a computer (supports HDCP).

NOTE: The DHD™ Controller is connected to this input.

8 AUDIO (INPUT2) (Stereo mini jack)

Used to obtain sound when INPUT1, INPUT2 is selected. Connect this jack to the audio output connector of the device connected to the plasma display's INPUT1 or INPUT2.

9 AUDIO (OUTPUT) (Stereo mini jack)

Used to output the audio of the selected source component connected to the main unit to an AV amplifier or similar component output can be set to variable or fixed.

10 MAIN POWER switch

Used to switch the main power or the main unit on and off.

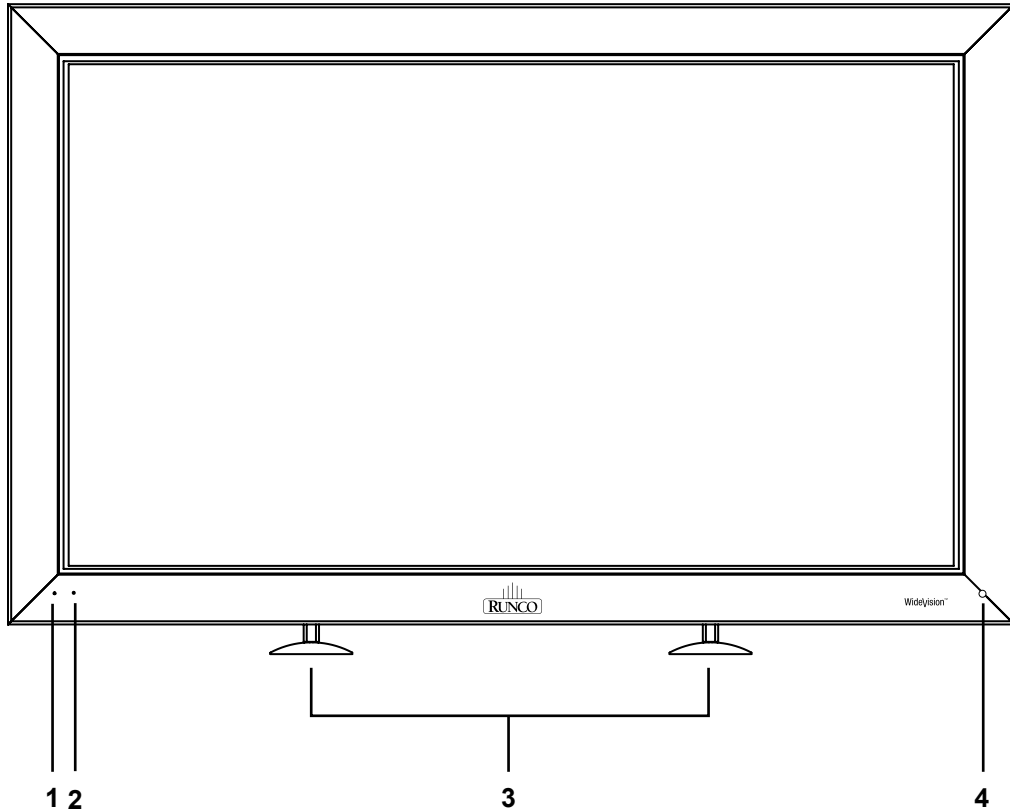
11 AC IN

A power cable is furnished with the main unit. Connect one end of the power cable to this connector and the other end to a standard AC power source.

12 SPEAKER (L) terminal

For connection of an external left speaker. Connect a speaker that has an impedance of 8 -16 Ω .

FRONT PANEL



1. ON Indicator

Lights green when the plasma display is operating. When flashing, the indicator is used to indicate error messages. The indicator flashes green once every one second when the (AUTO POWER OFF) function is operating.

2. STANDBY Indicator

This indicator is red during standby mode. The flashing pattern is also used to indicate error messages.

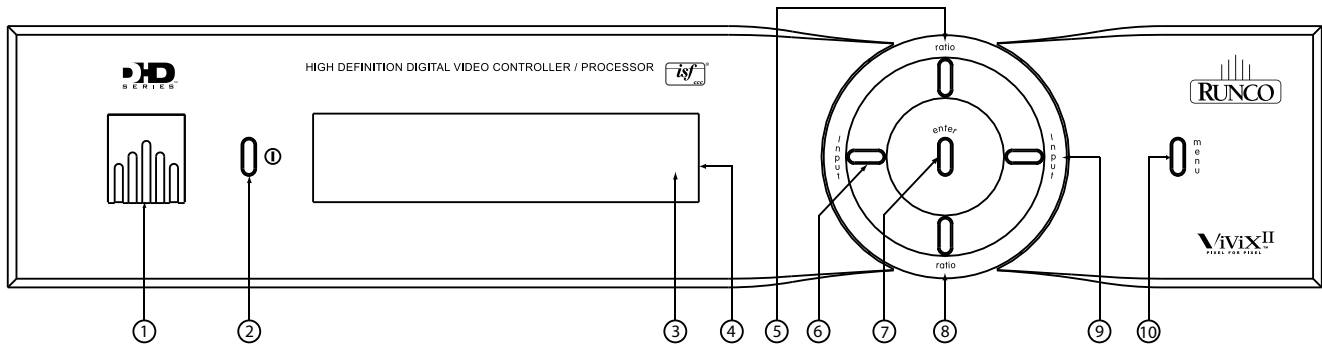
3. Display Stand

Optional accessory for tabletop mount.

4. Remote Control Sensor

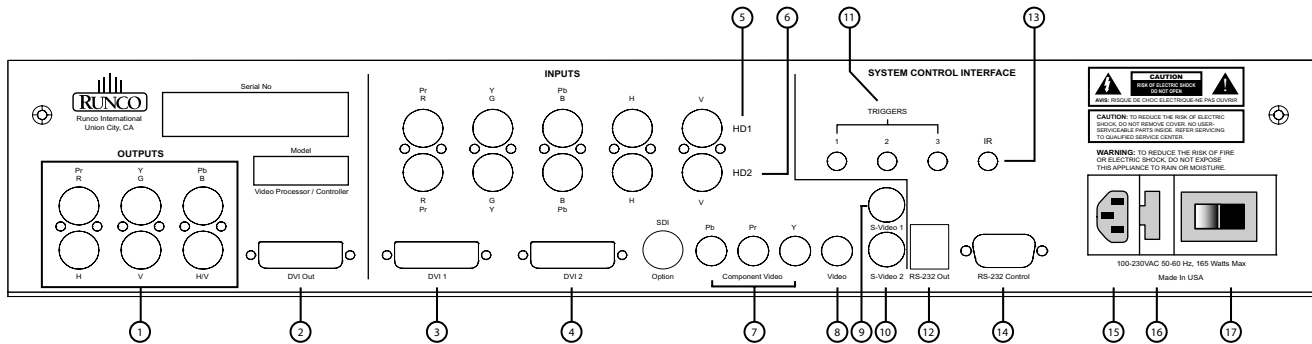
Receives the IR (infra-red) commands from the remote control.

Front Panel



1. **RUNCO ICON**
When the Red light is displayed the unit is in Standby, when Blue light is displayed the unit is On.
2. **POWER BUTTON**
Press once to toggle on from Standby mode to On mode, a second time to place into Standby mode. For a discreet on or off command, you can use the direct access buttons on the remote control.
3. **IR RECEIVER**
Receives the IR commands from the remote.
4. **FRONT PANEL DISPLAY**
Reads out all relevant status information of the DHD at all times. Can be used instead of the On Screen Display. Indicates the model number, current source, scan rate (resolution) and aspect ratio.
5. **UP BUTTON**
Use to direct select aspect ratios or move the menu cursor Up in the On-Screen Display. When no menus are present on-screen, the UP button will toggle you through aspect ratios in the following order:
Anamorphic → Cinema → VirtualWide → Letterbox → Standard (4:3)
6. **LEFT BUTTON**
Used to direct select inputs or move the menu cursor Left in the On Screen Display. When no menu is present on-screen, the LEFT button will toggle you through the different sources, in the order of:
HD Pass Thru 2 → HD Pass Thru 1 → DVI 2 → DVI 1 → HD/RGB2 → HD/RGB1
→ Component SD → S-Video 2 → S-Video 1 → Composite
7. **ENTER BUTTON**
When an item is highlighted on the On-Screen Display, the ENTER button will select the item.
8. **DOWN BUTTON**
Use to direct select aspect ratios or move the menu cursor Down in the On-Screen Display. When no menu is present on-screen, this button will toggle you through the different aspect ratios.
Standard (4:3) → Letterbox → VirtualWide → Cinema → Anamorphic
9. **RIGHT BUTTON**
Used to direct select inputs or move the menu cursor Right in the On Screen Display. When no menus are present on-screen, the RIGHT button will toggle you through the different sources, in the order of:
Composite → S-Video 1 → S-Video 2 → Component SD → HD/RGB 1 → HD/RGB 2 → DVI 1
→ DVI 2 → HD Pass Thru 1 → HD Pass Thru 2
10. **MENU BUTTON**
Pressing the MENU button will bring up the main menu. Also, if you are in an adjustment mode or function, pressing MENU will bring the menu back one level.

Rear Panel



OUTPUTS:

1. **ANALOG OUTPUTS (BNC Connectors)** (This output is not used when married to the VX-2c)
The various output lines used to drive the analog input of the display device. Individually, the jacks are: V=vertical sync, H=horizontal sync, B=Blue, G=Green, R=Red. Connect these to the corresponding projector inputs.
2. **DVI OUT**
The DVI digital link used to drive the digital input of an HDCP compliant display device. Connect to the projector's DVI inputs.

INPUTS:

3. **DVI 1 (Digital)**
DVI input #1, HDCP compliant.
4. **DVI 2 (Digital)**
DVI input #2, HDCP compliant.
5. **HD 1 (Analog BNC connectors)**
High Definition input #1, accepts RGB(HV) or YPrPb, 480p, 720p, 480i, 576i or 1080i.
6. **HD 2 (Analog BNC connectors)**
High Definition input #1, accepts RGB(HV) or YPrPb, 480p, 720p, 480i, 576i or 1080i.
7. **COMPONENT INPUT (RCA connectors)**
Standard Definition (480i/576i) Component (YPrPb) input. This is the input for component video from sources such as DVD players. (Do not set DVD player in progressive output mode).
8. **COMPOSITE INPUT (RCA connector)**
This is the input for Composite Video input from sources such as Laser disc players, VCRs and other miscellaneous video sources.
9. **S-VIDEO 1 INPUT**
This is the input for S-video #1 from sources such as Satellite receivers, S-VHS VCR's and DVD players.
10. **S-VIDEO 2 INPUT**
This is the input for S-video #2 from sources such as Satellite receivers, S-VHS VCR's and DVD players.
11. **TRIGGERS 1/2/3 (Outputs)**
Connection for 3 different 12V trigger controlled devices.
12. **RS-232 OUT (RJ-11 Connector)**
To transmit control signals to the plasma display.
13. **IR**
Wired input from an external remote control.
14. **RS-232 CONTROL**
Connection for an external RS-232 controller device to integrate the DHD with system automation control.
15. **POWER INPUT (100-230v)**
Plug in main power here.
16. **MAIN FUSE**
This is the main AC input fuse. (Main Fuse: 5mm x 20mm, 500mA, 250V, Slow Blow)
17. **MAIN POWER SWITCH**
Disconnects or applies main power to the processor.

DHD™ Controller Remote Control

(1) ON/OFF

Switches Power ON/OFF. (This does not operate when POWER/STANDBY indicator of the main unit is off.)

(2) IR OUTPUT INDICATOR

Illuminates when a button is pressed, indicating that an IR signal is being transmitted.

(3) ENTER BUTTON

When an item is highlighted on a menu, pressing ENTER will select that item.

(4) CURSOR (▲ / ▼ / ◀ / ▶)

Use these buttons to select items or settings and to adjust settings or switch the display patterns.

UP Button: When no menus are present on-screen, the UP button will toggle through aspect ratios in the following order: (RATIO) Anamorphic → Cinema → VirtualWide → Letterbox → Standard (4:3)

LEFT Button: When no menus are present on-screen, the LEFT button will toggle through the different sources in the following order: (INPUT) HD Pass Thru 2 → HD Pass Thru 1 → DVI 2 → DVI 1 → HD/RGB2 → HD/RGB 1 → Component SD → S-Video 2 → S-Video 1 → Composite

DOWN Button: When no menus are present on-screen, the RIGHT button will toggle through the different sources in the following order: (RATIO) Standard (4:3) → Letterbox → VirtualWide → Cinema → Anamorphic

RIGHT Button: When no menus are present on-screen, the RIGHT button will toggle through the different sources in the following order: (INPUT) Composite → S-Video 1 → S-Video 2 → Component SD → HD/RGB 1 → HD/RGB 2 → DVI 1 → DVI 2 → HD Pass Thru 1 → HD Pass Thru 2

(5) LIGHT BUTTON

Press this to illuminate the buttons.

(6) MENU BUTTON

Pressing this button will access the OSD (On-Screen Display) controls. Press this button during the display of the sub-menu to return to the previous menu, or exit the OSD menus.

(7) VIDEO BUTTON

Press this button to select VIDEO (composite video) as the source.

(8) COMP BUTTON

Press this button to select Component SD (480i/576i) input.

(9) DIRECT ACCESS BUTTONS

These red buttons to the right hand-side will allow you direct access to an aspect ratio, based on the format of the input signal. These buttons are:

ANA - selects Anamorphic (16:9) widescreen aspect ratio

LETBOX - selects Letterbox format aspect ratio

4x3 - selects Standard 4:3 aspect ratio

V-WIDE - selects VirtualWide aspect ratio

(10) S-VID 1 and S-VID 2 BUTTONS

Press this button to select between the S-Video 1 and S-Video 2 inputs.

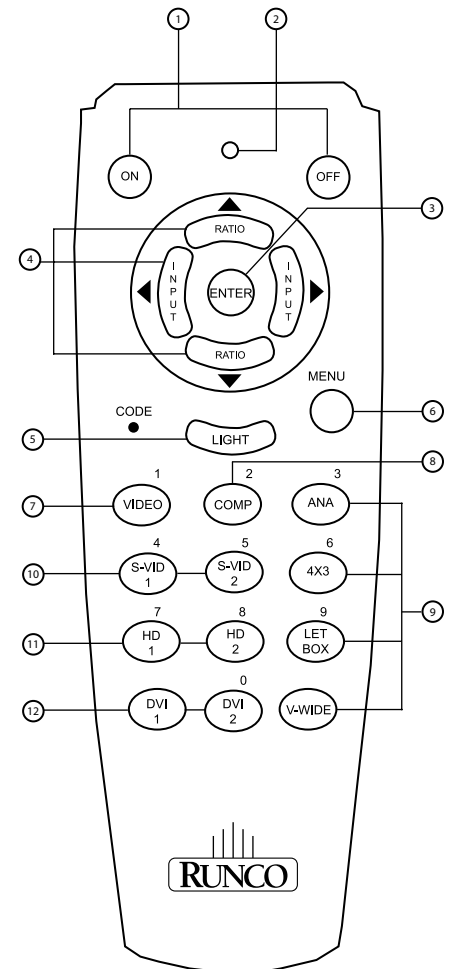
(11) HD1 and HD2 BUTTONS

Press this button to select between HD1 (High Definition) signal and HD2 signal inputs. These inputs can auto-detect input signals between YPbPr and RGBHV.

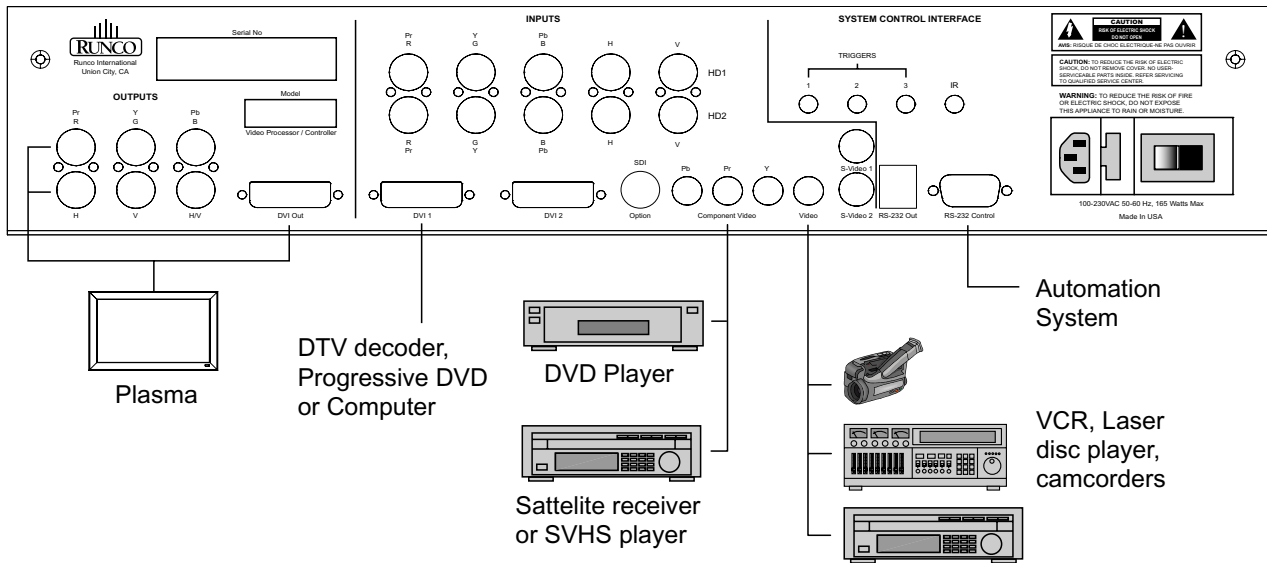
(12) DVI 1 and DVI 2 BUTTONS

Press this button to select between the DVI1 signal and DVI2 signal inputs.

NOTE: If the remote control loses its 'memory' as a result of weak or dead batteries, it must be re-programmed for the Controller's code set. To reprogram the remote to the default IR Code Set, press and hold the CODE button followed by 1, 7.



DHD™ CONTROLLER CONNECTION EXAMPLES



While there are many different ways to connect your source equipment to your DHD Controller, the examples shown above are the most common and are recommended by Runco.

• COMPOSITE VIDEO INPUT

Composite video is the most common type of signal used, but is also the lowest in picture quality. Many sources have outputs that are limited to Composite video, such as some VCR's and camcorders. Others, such as Laser Disc players, actually produce slightly better results when using Composite video. While the DHD Controller has an excellent decoder for Composite video, it is recommended that Composite video be used only if necessary.

• S-VIDEO INPUT

S-Video is an improved video input over composite video. Using such sources as satellite receivers, high-quality VCRs and DVD players (that have no Component output) will produce a MUCH cleaner and sharper signal. Video signal decoder artifacts that are associated with Composite video (dot crawl and 'rainbows') are non-existent when using S-Video.

• COMPONENT INPUT

Component video is the best type of standard definition signal that can be used. The most common sources that use Component outputs are DVD players, and it is highly recommended that Component be used when possible. Component video goes one step beyond S-Video in picture quality; chroma (color) information is more resolved and the overall picture appears more well-defined.

• HD1/HD2

All analog HDTV signals must be input into this port. It may also be used for other high-resolution signals such as progressive DVD players or analog (VGA or better) computer video.

OVERALL FUNCTIONAL DESCRIPTION

DIGITAL INPUTS:

• DVI 1 / DVI 2

These are High Definition Digital Video Interface (DVI) inputs; Runco recommends using these digital inputs whenever possible. Using the DVI 1 and DVI 2 inputs ensures the highest video quality because the signal is carried in the digital domain throughout the entire signal path, from source component output, through the DHD and finally into the plasma. This maintains maximum signal purity.

Use these inputs to connect digital High Definition sources that have a DVI output, such as HD tuners and set top boxes, satellite receivers, DVD players, etc. Both DVI inputs supports the HDCP (High Definition Content Protection) system.

ISF Calibration:

The PL-43DHD/PL-50DHD plasmas have been designed to incorporate setup and calibration standards established by the Imaging Science Foundation (ISF). The ISF has developed carefully crafted, industry-recognized standards for optimal video performance and has implemented a training program for technicians and installers to use these standards to obtain optimal picture quality from Runco video display devices. Accordingly, Runco recommends that setup and calibration be performed by an ISF certified installation technician.

All signal types require separate processing. Therefore there is a need to calibrate each and every input separately.

When beginning calibration of the DHD and display, it is imperative that at least one of the analog SD inputs (S-Video or RCA Component) be calibrated first. In doing this, the plasma is calibrated to the controller. After one of the SD inputs is calibrated, calibration of the HD analog or DVI sections can follow.

Once the initial settings have been completed, the “front panel display” (color, tint, sharpness, etc.) can be adjusted for each aspect ratio. The calibration procedures for these adjustments are outlined in “picture quality adjustments”.

QUICK SETUP GUIDE

Step 1 Connection

1. Connect the RGBHV cable between the Plasma display and the DHD RGBHV output
 2. Connect the 9-pin to RJ-11 adapter only to the plasma's Com Link (RS-232) input, tighten the retaining screws.
 3. Connect the RJ-11 phone type cable between the projector and the DHD controller.
 4. Connect the AC Power cord to the Plasma, but leave the Main AC in Off position.
 5. Connect all input sources to the controller. Video (Composite), S-Video to1 or 2, Component 480i (RCA) input, HD signals to HD1 or HD2 (BNC), DVI
- Note:** For proper system calibration S-Video or Component 480i from the DVD player must be used; preferably Component 480i connects to the 3 RCA type input. Joe Kane Video Essential or Avia DVD test disk can be used for image calibration.
6. Connect AC to the DHD controller.
 7. Switch both main AC to On position from the Plasma and the DHD.

Step 2 Calibration and Setup

1. From the controller or use the supplied remote and press the power button (ON) to turn the system on.
2. Make sure you have picture on the screen from all connected sources.

| |
|--|
| <p>To get into Calibration and Service mode. Press Menu, highlight an empty space below Information. Press “Enter, Right, Right, Left, Left, Enter”</p> |
|--|

- Note:** The system must be setup first by using S-Video or Component 480i (RCA input) preferably Component 480i first.
3. Select Component SD from the DHD controller.
 4. From the DHD controller, press Menu button to call up the DHD OSD. Use the Up or Down arrow button to select Calibration and press Enter.
 5. From the Calibration screen select ISF Night Input Image.
 7. Using a test disc and select the Pluge pattern for Brightness and 10-step gray scale for Contrast Adjust for correct Brightness and Contrast.
 8. Select Display Color and use the 80 IRE window to adjust the Gain for D6500 Kelvin and 20 or 30 IRE window for Offset setting for D6500.
 9. Return to Input Image for Color and Tint adjustments.

For S-Video and Composite input

Select Calibration and highlight Input Image for ISF night option and only adjust the Brightness, Contrast, Color, Tint, and Sharpness. No other adjustment is needed.

Step 3 HD and DVI Setup

From DHD controller:

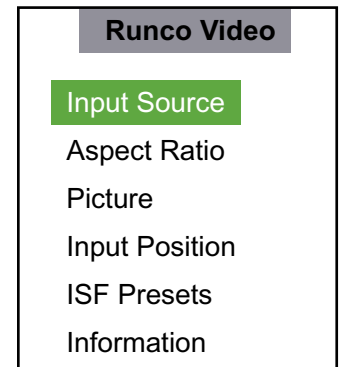
1. For HD input and DVI, select Calibration press Enter and under ISF Night select Input Image for video adjustments.
 2. Select Input Color for white balance adjustments.
- Special suggestion: For Y/Pb/Pr Input Color, only adjust the Pb and Pr offset.

MENU DESCRIPTION AND NAVIGATION

When the MENU button is pressed on either the remote control or the front panel, the main menu will appear on-screen. An example of the main menu is shown to the right. The UP and DOWN buttons on the front panel, and IR Remote Control will move the selected item on the menu.

Opening Screen

- Press ENTER to access the Input Source selection menu
- Press ENTER to access the Aspect Ratio selection menu
- Press ENTER to access the Picture setting menu
- Press ENTER to access the Input Position setting menu
- Press ENTER to access the ISF and Custom Presets menu
- Press ENTER to view information about the controller



The active source is indicated by an arrow to the left of the source; note that in the example to the right, Composite is the current source.

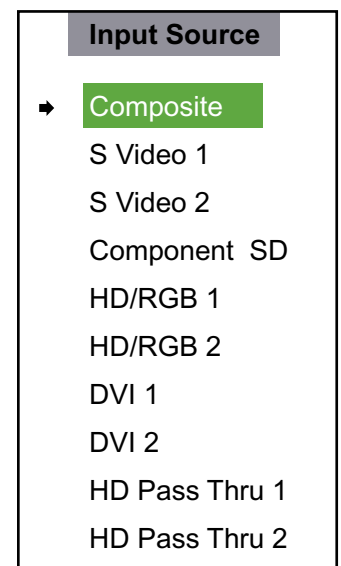
Input Source

Indicates selection has been made for the Input Source selection menu

- Press ENTER to select the Composite input
- Press ENTER to select the S-Video 1 input
- Press ENTER to select the S-Video 2 input
- Press ENTER to select the Component SD input
- Press ENTER to select the HD/RGB 1 input
- Press ENTER to select the HD/RGB 2 input
- Press ENTER to select the DVI 1 input
- Press ENTER to select the DVI 2 input
- Press ENTER to select the HD Pass Thru 1 input
- Press ENTER to select the HD Pass Thru 2 input

To select a source via the main menu, press either the up or down buttons on the remote or front panel and highlight the desired source, and press ENTER. Otherwise, you may select a source by pressing either the left or right arrow buttons (on the remote or front panel) when no menus are on-screen, or by pressing one of the direct access buttons on the remote control (recommended).

NOTE: If DVI input is used with HDCP content, RGBHV output is automatically disabled. This is in compliance with HDCP regulations.



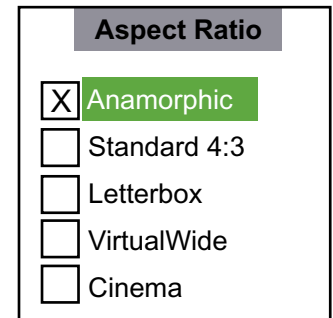
If pass-through is selected, note that no on-screen menus will be displayed since the signal is simply being 'looped' directly through the analog output. When pass-through is the selected source, pressing MENU will not automatically select the last selected input before Pass-through was selected. If you wish to choose another source, Runco recommends using the direct access buttons to select the desired source as opposed to pressing MENU. Pass-through is not available when the DVI output is in use.

Aspect Ratio provides selection of one of five aspect ratios: Anamorphic, Standard 4:3, Letterbox, VirtualWide and Cinema. To select an aspect ratio via the main menu, press either the up and down buttons on the remote or front panel, highlight ASPECT RATIO and press ENTER. The aspect ratio menu will then appear with the four choices; highlight the desired aspect ratio with the up or down buttons and press ENTER. Otherwise, you may select an aspect ratio by pressing either the up or down arrow buttons (on the remote or front panel) when no menus are on-screen, or by pressing one of the direct access buttons on the remote control. The aspect ratio setting is saved for each input and resolution separately.

Aspect Ratio

Indicates selection has been made for the Aspect Ratio selection menu

- Press ENTER to select the Anamorphic Aspect Ratio, 16:9
- Press ENTER to select the Standard 4:3 Aspect Ratio
- Press ENTER to select the Letterbox Aspect Ratio, 16:9 in 4:3
- Press ENTER to select the VirtualWide Aspect Ratio
- Press ENTER to select the Cinema Aspect Ratio for 2.35



Picture quality adjustments are the controls that change different parameters of the image such as the amount of color, black level, etc. This section will describe what each function does and how to adjust them properly. The picture settings are stored separately for each input. To access the picture quality adjustments, press MENU and over the cursor down to Picture (indicated by the green highlight) and press ENTER. The picture quality sub-menu will then appear.

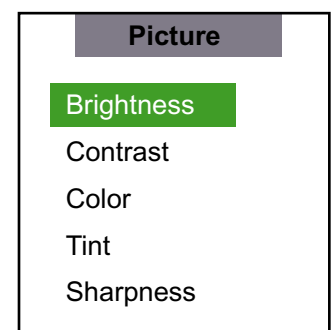
To make an adjustment to a particular function, highlight the function with the up or down arrow buttons and press ENTER. Once the function is on-screen (i.e. brightness), pressing the UP arrow button on the remote or front panel will increase the value of that function; pressing the DOWN arrow on the remote or front panel will decrease the value of that function.

Picture (These settings are stored separately for each input).

Indicates selection has been made for the Picture selection menu

- Press ENTER to allow the increase and decrease of image Brightness with the LEFT and RIGHT arrows.
- Press ENTER to allow the increase and decrease of image Contrast with the LEFT and RIGHT arrows.
- Press ENTER to allow the increase and decrease of image Color with the LEFT and RIGHT arrows.
- Press ENTER to allow the increase and decrease of image Tint with the LEFT and RIGHT arrows.
- Press ENTER to allow the increase and decrease of image Sharpness with the LEFT and RIGHT arrows.

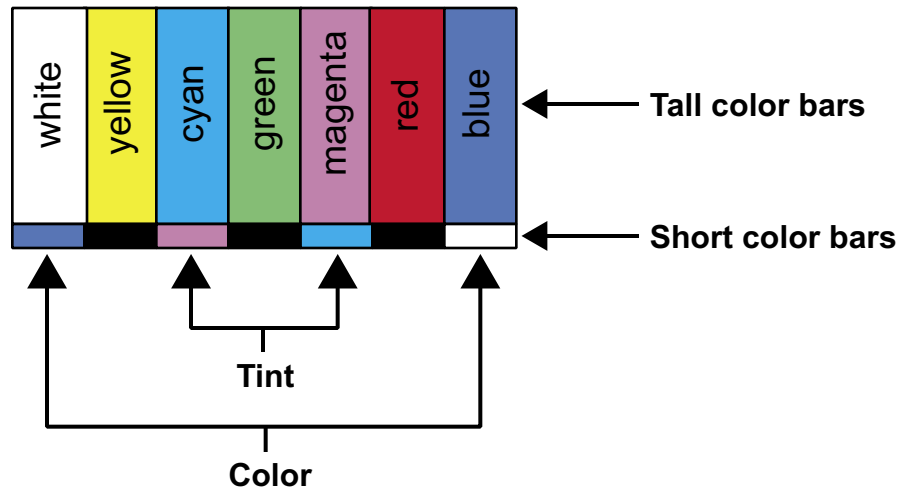
NOTE: A BLUE FILTER must be used so only the blue color bars can be seen on a standard color bar test pattern. Blue filters are provided with Video Essentials or AVIA test DVDs.



While each of the picture quality adjustments can be set to suit the needs of the user, there is a ‘proper’ way to set the adjustments. For setting TINT and COLOR, please refer to the color bar test pattern below.

TINT (also known as ‘hue’) is essentially the ratio of red to green in the color portion of the image. If TINT is decreased, the image will appear redder, and increasing it will cause the image to appear greener. To set TINT properly, look at the color bar pattern through a blue filter (or mute the red and green outputs). Adjust TINT until the middle two tall color bars (labeled as “cyan” and “magenta”) to match the middle short color bars (see color bar drawing below).

COLOR (also known as ‘saturation’) increases or decreases the amount of color in the image. To set COLOR properly, look at the color bar pattern through a blue filter (or mute the red and green outputs). Adjust COLOR until the outer two tall color bars (labeled as “white” and “blue”) to the outer short color bars (see color bar drawing below).

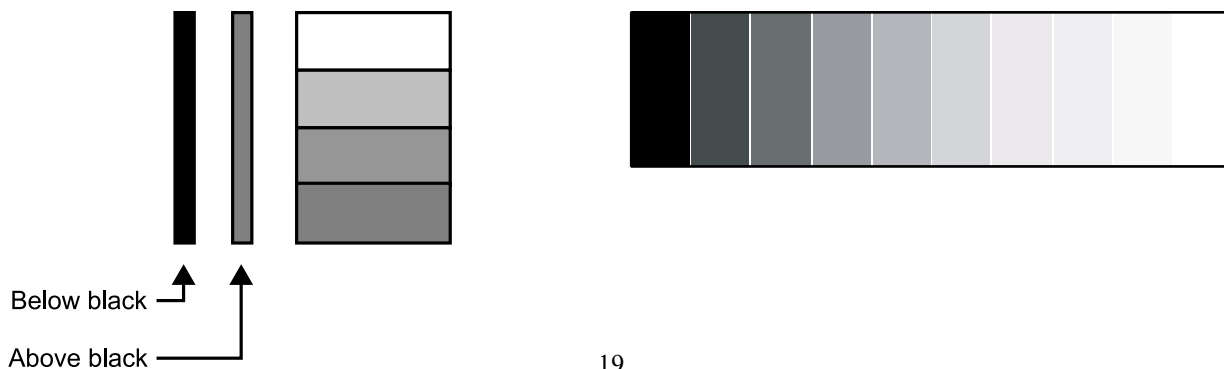


BRIGHTNESS adjusts the black level of the image. To adjust this properly, adjust BRIGHTNESS until the ‘below black’ bar JUST disappears, but the ‘above black’ bar is still barely visible (see lower left chart).

NOTE: Some DVD players cannot pass the ‘blacker than black’ bar (they won’t pass PLUGE), and that bar will never be visible. In a case like this, adjust the ‘above black’ bar until it is slightly brighter than the background that surrounds it.

CONTRAST adjusts the white level of the image. For Fixed-pixel displays, adjust contrast until there is a distinct definition between the two brightest bars.

NOTE: For best results, Runco recommends that CONTRAST be set to ‘0’ or very close to it. (see lower right chart).



SHARPNESS adjusts the amount of high-frequency detail in the image. This can be adjusted to the preference of the user. Keep in mind that when SHARPNESS is decreased, fine details in the image will become ‘soft’; when it is increased, fine details will become sharper but will also make the picture appear ‘noisy’ if adjusted too high.

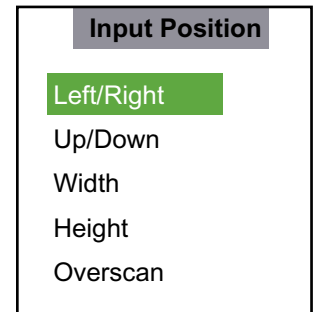
All the picture adjustments (contrast, brightness, color, tint and sharpness) must be saved manually to Custom 1 or Custom 2 under ISF presets menu. If not, all the picture adjustments will be whited out when ISF presets (ISF Night, ISF Day, Custom 1, Custom 2) are changed.

Input Position

Indicates selection has been made for the Input Position selection menu.

These settings are stored separately for each input and each resolution for that input.

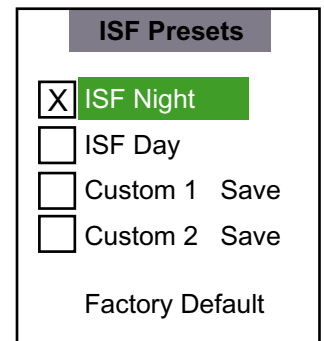
- Press ENTER to shift the Image Position Left/Right with the LEFT and RIGHT arrows.
- Press ENTER to shift the Image Position Up/Down with the LEFT and RIGHT or UP/DOWN arrows.
- Press ENTER to adjust the Image Position Width with the LEFT and RIGHT arrows.
- Press ENTER to adjust the Image Position Height with the LEFT and RIGHT or UP/DOWN arrows.
- Press ENTER to allow shifting the Image Position Overscan percentage with the LEFT and RIGHT arrows.



ISF Presets

Indicates selection has been made for the ISF Presets selection menu. These presets allow you to save the settings that are optimized for different viewing conditions. When you select a preset, all the picture settings will be reset. Any settings you have made but not saved will be lost. There are two (ISF Day and ISF Night) custom presets that you may use to save picture settings.

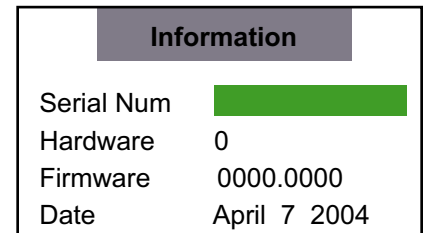
- Press ENTER to select the ISF Night calibration settings.
- Press ENTER to select the ISF Day calibration settings.
- Press ENTER to select the Custom 1 calibration settings, or scroll RIGHT and press ENTER to save settings you have made.
- Press ENTER to select the Custom 2 calibration settings, or scroll RIGHT and press ENTER to save settings you have made.
- Press ENTER to force the Presets back to their Factory Default settings.



Information

Indicates selection has been made for the Information selection menu

- Indicates the unit Serial Number on the front panel display.
- Indicates the Hardware Version number on the front panel display.
- Indicates the Firmware Version number on the front panel display.
- Indicates the Firmware Version build date on the front panel display.

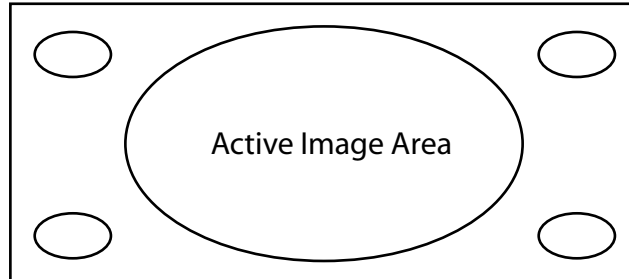


This information will help your service technician if there is a problem with your system.

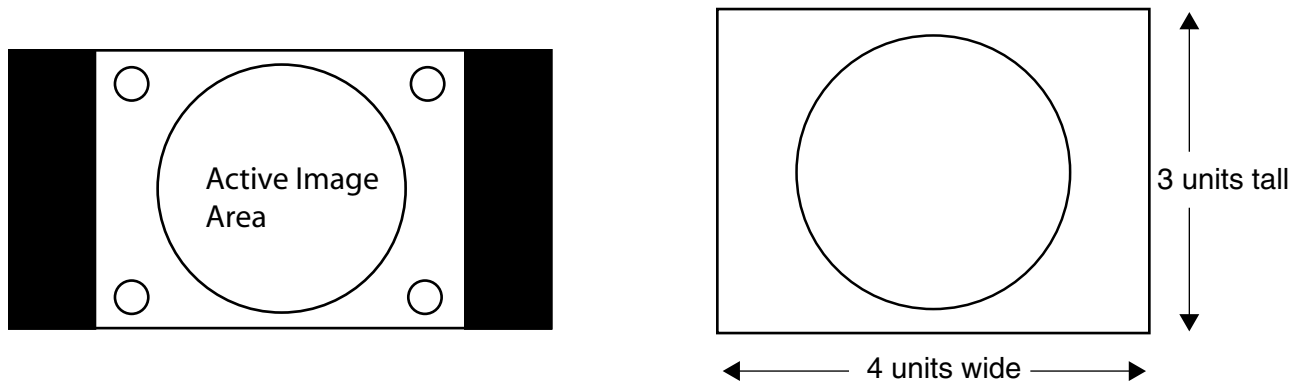
There are four aspect ratios available that can be selected for video signal inputs.

16:9 Screens:

- ANAMORPHIC: The image is compressed vertically, but anamorphic software will appear properly proportioned. This is best suited for use with 16:9 DVD's.



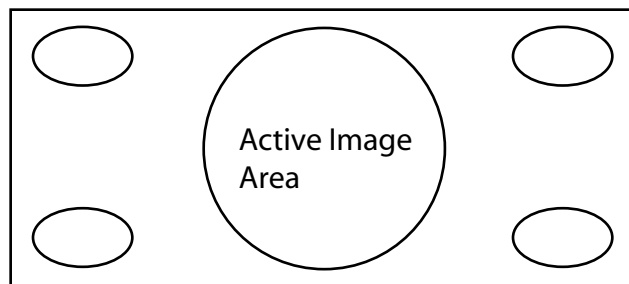
- STANDARD 4 x 3: The input signal will be scaled to fit in the center of the 16:9 screen.



- LETTERBOX: The image in the Letterbox mode will be stretched vertically, and the top and bottom portion 'blanked-off'. This ratio is best suited for DVD, non-anamorphic DVDs and LaserDisc movies.



- VIRTUALWDE: A 4:3 image that is transformed into a 16x9 image to allow the user to watch standard DTV on their widescreen display.



RS-232 COMMUNICATIONS AND COMMANDS

Baud rate: 19200 (fixed)

Bits: 8

No Parity

All protocol in ASCII format

RS-232 input connector pin numbers: TxD= Pin# 2, RxD= Pin# 3, Gnd= Pin# 5

Command format (single command): command value (i.e. brightness 100).

NOTE: A space (not an underscore) or comma may be used between the command and its value.

Command string format: command, command value, command etc.

(i.e. COMPOSITE, BRIGHTNESS 100, ANAMORPHIC, <CR>)

NOTE: In between commands, a comma or space may be used

NOTE: A carriage return must be used after each command or string.

Other notes:

- For command strings, a maximum of 255 characters can be used in a single string.
- PARAMETER min/max refers to a function's minimum and maximum value range. Inputting values above or below their range may cause unpredictable (but not fatal) results.

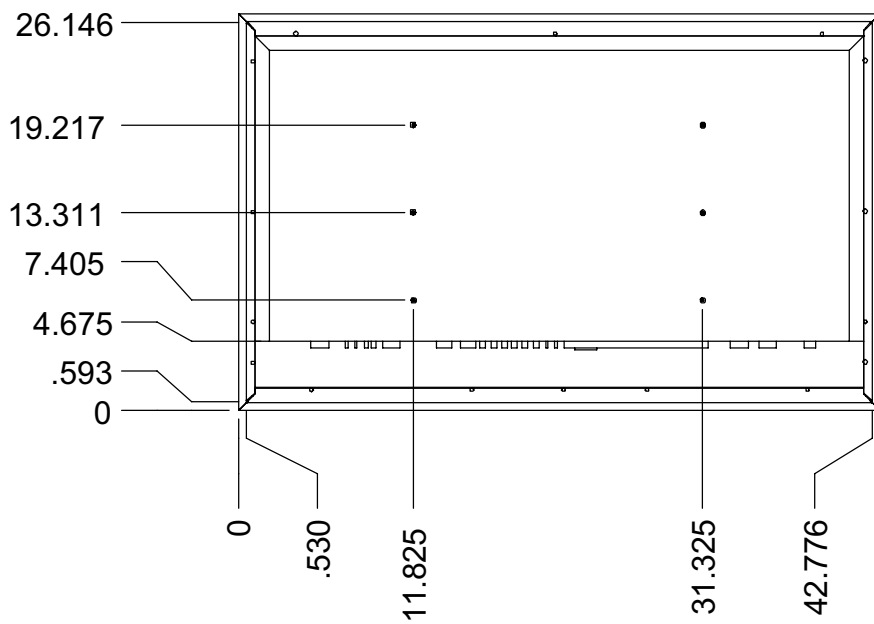
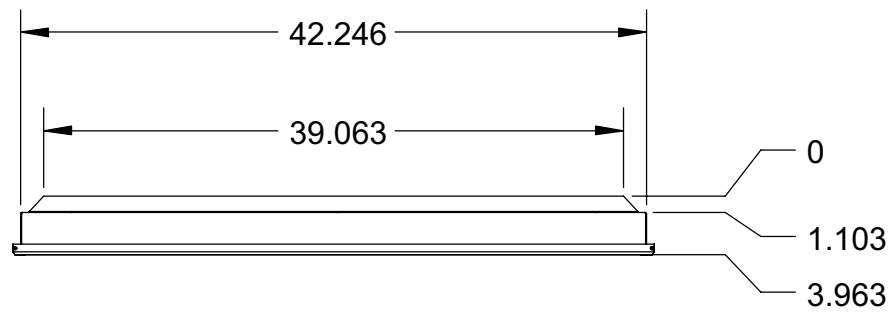
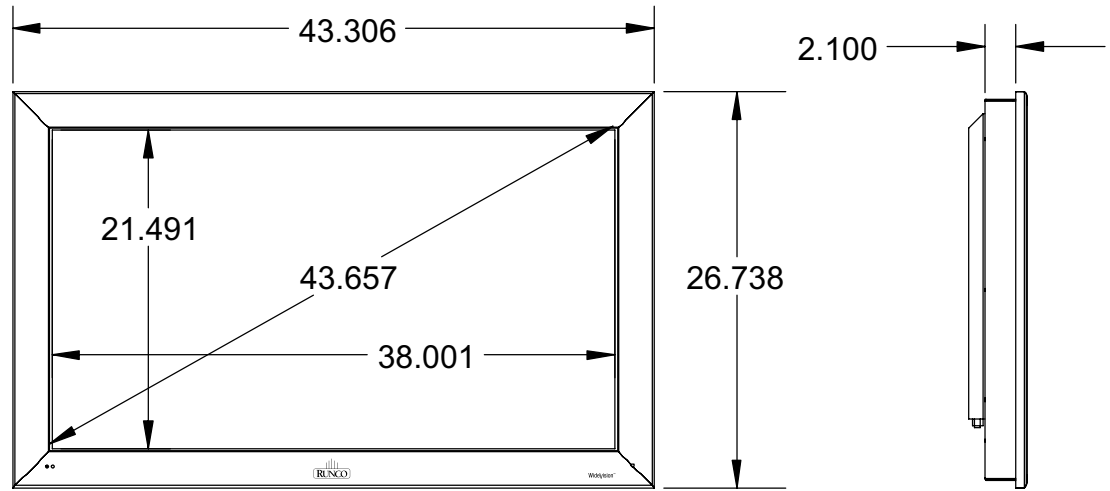
RS-232C Commands

| Command | Parameter (min/max) | Value Stored? | Description |
|-------------|------------------------|---------------|---|
| POWER | 0/1 | NA | Turns DHD On and Off |
| ON | NA | NA | Turns DHD Controller on |
| OFF | NA | NA | Turns DHD Controller off |
| COMPOSITE | NA | YES | Selects the Composite video input |
| SVIDEO1 | NA | YES | Selects the S-Video 1 input |
| SVIDEO2 | NA | YES | Selects the S-Video 2 input |
| COMPONENT | NA | YES | Selects the Component input |
| HD1 | NA | YES | Selects the RGB HD 1 input |
| HD2 | NA | YES | Selects the RGB HD 2 input |
| DVI1 | NA | YES | Selects the DVI 1 input |
| DVI2 | NA | YES | Selects the DVI 2 input |
| HD1Pass | NA | YES | Selects the HD 1 Pass Thru input |
| HD2Pass | NA | YES | Selects the HD 2 Pass Thru input |
| ANAMORPHIC | NA | YES | Selects the anamorphic aspect ratio |
| STANDARD | NA | YES | Selects the standard (4:3) aspect ratio |
| LETTERBOX | NA | YES | Selects the letterbox aspect ratio |
| VIRTUALWIDE | NA | YES | Selects the VirtualWide aspect ratio |
| CINEMA | NA | YES | Selects 2.35 aspect ratio |
| RGBNN | NA | YES | Outputs color space RGB w/negative, negative sync |
| RGBPP | NA | YES | Outputs color space RGB w/positive, positive sync |
| RGBS | NA | YES | Outputs color space RGB w/embedded sync on green |
| YUV | NA | YES | HD YUV output color space |
| IHPOS | -100/100 | YES | Sets a value for input horizontal position offset (for current input and resolution) |
| IVPOS | -100/100 | YES | Sets a value for input vertical position offset (for current input and resolution) |
| IWIDTH | -100/100 | YES | Sets the value for input width adjustment (for current input and resolution) |
| IHEIGHT | -100/100 | YES | Sets the value for input height adjustment (for current input and resolution) |
| OVERSCAN | 0/10 | YES | Sets the overscan value in % (for current input and resolution) |
| OHPOS | -100/100 | YES | Sets the value for output width adjustment |
| OVPOS | -100/100 | YES | Sets the value for output height adjustment |
| OWIDTH | -100/100 | YES | Sets the value for output width adjustment |
| OHEIGHT | -100/100 | YES | Sets the value for output height adjustment |
| BRIGHTNESS | -100/100 | YES | Sets a value for brightness for current input |
| CONTRAST | -100/100 | YES | Sets a value for contrast |
| COLOR | -100/100 | YES | Sets a value for color |
| TINT | -100/100 | YES | Sets a value for tint |
| SHARPNESS | -6/6 | YES | Sets a value for sharpness |
| NIGHT | NA | YES | Selects the ISF Night preset |
| DAY | NA | YES | Selects the ISF Day preset |
| CUSTOM1 | NA | YES | Sets the user custom/preset |
| CUSTOM2 | NA | YES | Sets the user custom/preset |
| TRIGGER | 0-7 | YES | Sets the triggers for the current aspect ratio |
| BKGND | -100/100 | YES | Sets the background color for letterbox, black, grey, white |
| POWER? | NA | NA | Returns ON or OFF |
| DATE? | NA | NA | Returns FW build date |
| SWVER? | NA | NA | Returns FW version |

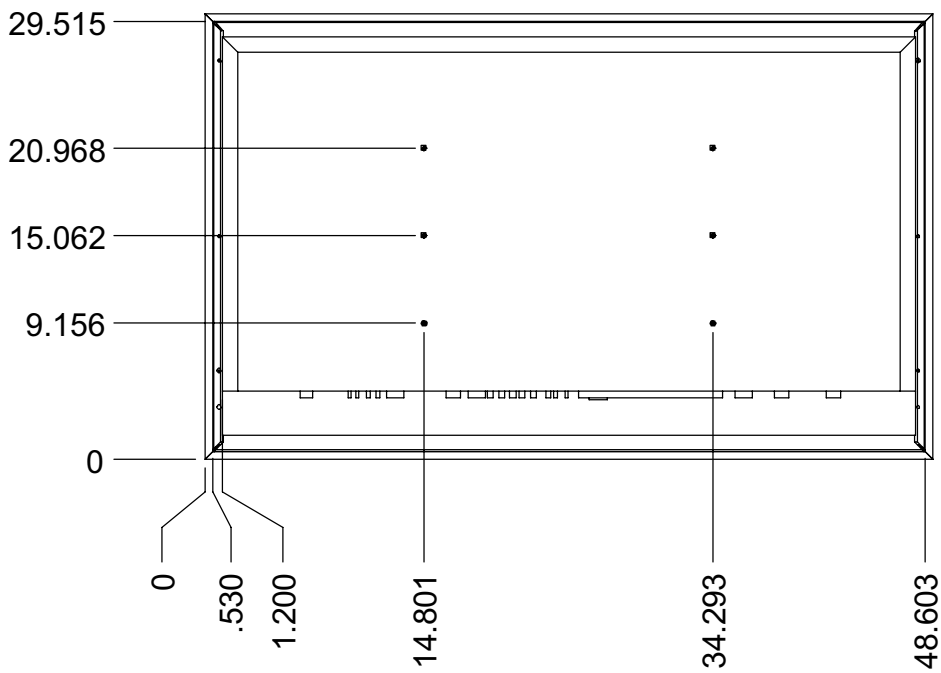
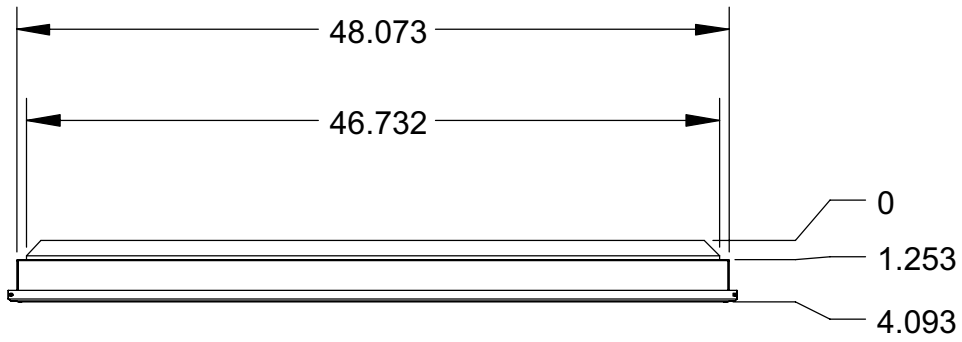
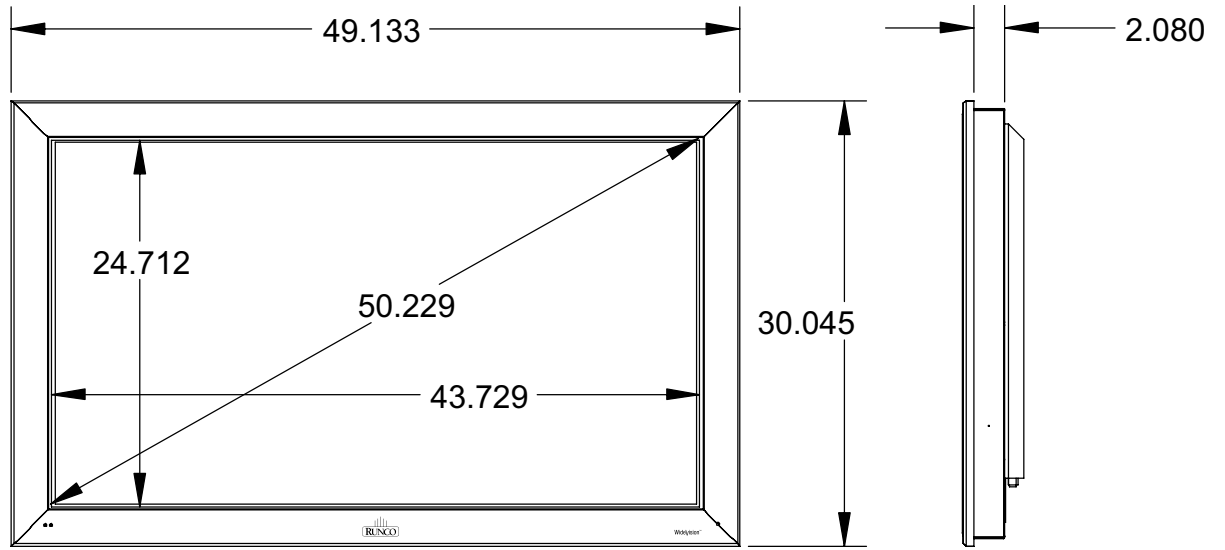
| Command | Parameter (min/max) | Value Stored? | Description |
|----------------|--------------------------------|----------------------|--|
| IHPOS? | NA | NA | Returns input horizontal position value |
| IHEIGHT? | NA | NA | Returns input vertical height value |
| OHPOS? | NA | NA | Returns output horizontal position value |
| OHEIGHT? | NA | NA | Returns output vertical height value |
| COLOR? | NA | NA | Returns color setting value |
| ASPECT? | NA | NA | Returns current aspect ratio |
| INPUT? | NA | NA | Returns active input |
| OUTRES? | NA | NA | Returns output resolution |
| SERIALNUM? | NA | NA | Returns serial number |
| DATE? | NA | NA | Returns the date of firmware |
| IVPOS? | NA | NA | Returns input vertical position value |
| OVERSCAN? | NA | NA | Returns overscan percentage |
| OVPOS? | NA | NA | Returns output vertical position value |
| BRIGHTNESS? | NA | NA | Returns brightness setting value |
| TINT? | NA | NA | Returns tint setting value |
| PRESET? | NA | NA | Returns preset ISF day or night |
| POWER? | NA | NA | Returns power status |
| ASPECTIN? | NA | NA | Returns the input source aspect |
| SWVER? | NA | NA | Returns software version number |
| IWIDTH? | NA | NA | Returns input horizontal width value |
| PHASE? | NA | NA | Returns phase setting value |
| OWIDTH? | NA | NA | Returns output horizontal width value |
| CONTRAST? | NA | NA | Returns contrast setting value |
| SHARPNESS? | NA | NA | Returns sharpness setting value |
| BKGND? | NA | NA | Returns background setting value |
| INRES? | NA | NA | Returns input resolution |
| ASPECTOUT? | NA | NA | Returns output screen aspect ratio |
| HWVER? | NA | NA | Returns hardware version number |

DIMENSIONS

PL-43DHD Plasma



PL-50DHD Plasma



SPECIFICATIONS

Plasma

| | PL-43DHD | PL-50DHD |
|----------------------------------|---|---|
| Native Resolution: | 1024 x 768 | 1280 x 768 |
| Screen Size: | 43 in. (diagonal) | 50 in. (diagonal) |
| Screen Aspect Ratio: | 16:9 | 16:9 |
| Available Aspect Ratios: | 4:3, Letterbox, 16:9 Anamorphic, VirtualWide | 4:3, Letterbox, 16:9 Anamorphic, VirtualWide |
| Image Area (W x H): | 37 3/8 in. (949.30 mm) x 21 1/8 in. (536.60 mm) | 43 1/4 in. (1099 mm) x 24 1/2 in. (622.30 mm) |
| DTV Compatibility: | 480p, 720p, 1080i | 480p, 720p, 1080i |
| Contrast Ratio: | 1000:1 | 1000:1 |
| Data/Graphics Capability: | 640 x 400 to 1600 x 1200 | 640 x 400 to 1600 x 1200 |
| Inputs: | (1) RGB/Component, (1) RGB 15 pin, (1) DVI-Digital | (1) RGB/Component, (1) RGB 15 pin, (1) DVI-Digital |
| Power Requirements: | 100 -120 VAC, 50/60 Hz 220V AC (Preset at the factory only) | 100 -120 VAC, 50/60 Hz 220V AC (Preset at the factory only) |
| Power Consumption: | 380W | 480W |
| Operating Environments: | 32° - 104°F (0° - 40°C), 20-80% Humidity (non-condensing) | 32° - 104°F (0° - 40°C), 20-80% Humidity (non-condensing) |
| Dimensions | Width: 43 3/8 in. (1102 mm) Depth: 4 in. (101.60 mm) Height: 26 3/4 in. (679.40 mm) Weight: 80 lbs. (36.3 kg) | Width: 49 1/4 in. (1251 mm) Depth: 4 3/32 in. (104 mm) Height: 30 1/8 in. (765.20 mm) Weight: 96 lbs. (44.0 kg) |
| Regulatory Approvals: | FCC | FCC |
| Limited Warranty: | (3) Three years parts and labor (not including the plasma glass panel) from the date of delivery to the end user. (1) One year parts and labor on the plasma glass panel from the date of delivery to the end user. | (3) Three years parts and labor (not including the plasma glass panel) from the date of delivery to the end user. (1) One year parts and labor on the plasma glass panel from the date of delivery to the end user. |

DHD Controller

| | |
|---|--|
| Aspect Ratios: | Anamorphic, Letterbox, VirtualWide™, 4:3 (on either 16:9 or 4:3 screens) |
| Input Standards: | NTSC/PAL |
| Output Resolution: | 720p |
| Output: | (1) HD- R (Pr), G (Y), B (Pb), H, V; (1) DVI with HDCP |
| Inputs: | (1) Composite; (2) S-Video; (1) Component; (2) HD- R (Pr), G (Y), B (Pb), H, V; (2) DVI with HDCP |
| Control Optoins: | Discrete infrared remote, (2) RS-232, (1) 9-pin Connector, (9) RJ-11, Front panel controls |
| Screen Trigger/ Masking Outputs: | (3) 12V DC, 1/8A |
| Bandwidth: | 180 Mega Samples/Second (MSPS) |
| Power Requirements: | 100-240V AC (auto sensing), 50/60 Hz, 160W |
| Operating Environments: | 41° - 95°F (5° - 35°C), 0-90% Humidity (non-condensing) |
| Dimensions : | Width: 17 1/2 in. (444.50 mm) Depth: 4 3/8 in. (111.13 mm) Height: 26 3/4 in. (679.40 mm) Weight: 80 lbs. (36.3 kg) |
| Included Accessories: | Rack mounting brackets |
| Regulatory Approvals: | Complies with FCC, CE, C-Tick |
| Limited Warranty: | (2) Two years parts and labor from the date of delivery to the end user. |

PLASMA SERVICE REMOTE CONTROL

NOTE: FOR DEALER USE ONLY

A. ASPECT RATIO

Press to change the aspect ratio or geometry of the image. Different resolutions will allow for different aspect ratios.

B. RGB SETUP

When entering a computer-type (VESA) signal, press to automatically center and resize the image.

C. POWER

Press to cycle the monitor between on and standby.

D. PC/HDTV-1

Selects the 15-pin D-sub input for computer-type (VESA) signals or HDTV signals.

E. HDTV-2

Selects the computer DVI input.

F. INFO

While video is being displayed, this will display timing information about the selected signal.

G. SDTV-1

Selects the first standard definition input, either S-Video or Composite video based on the toggle button.

H. SDTV-2

Selects the second standard definition input, for interlaced component video input.

I. DIGITAL IN

Selects the digital video from the DVI input.

J. MENU

Activate or de-activate the menu.

K. MAGNIFY

Zooms in on the image, particularly useful for computer-type (VESA) images.

L. UP

Scrolls the highlight bar in the menu up.

M. LEFT

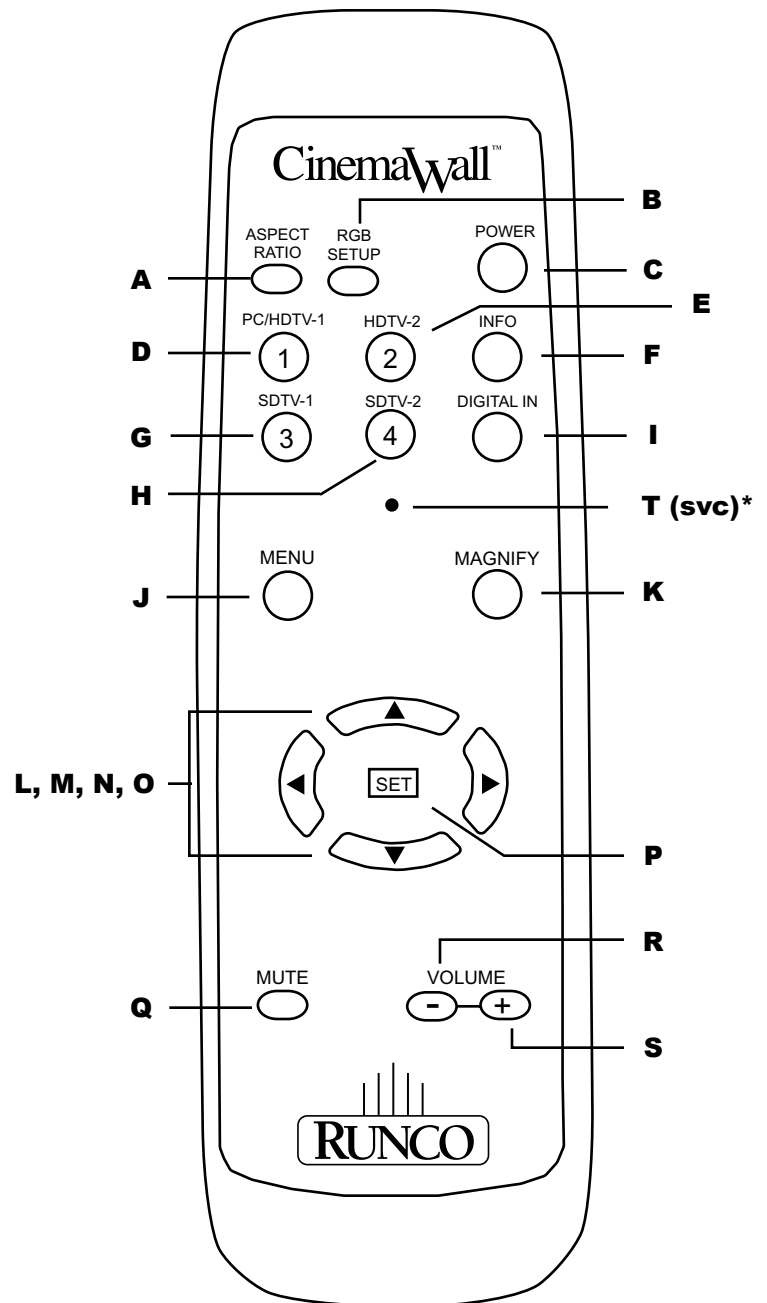
Used for scrolling left, particularly during adjustment menus.

N. RIGHT

Used for scrolling right, particularly during adjustment menus.

O. DOWN

Scrolls the highlight bar in the menu down.



P. SET

Use for entering a sub-menu when selected by high light.

Q. MUTE

Used to mute the sound system.

R. VOLUME -

Used to reduce the volume of the sound system.

S. VOLUME +

Used to increase the volume of the sound system.

T. INSTALLER ADJUST - svc (pin hole)*

Used to access the INSTALLER ADJUST MENU.

RUMA-010900
11-2-04 v2.1



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