OWNER'S OPERATING MANUAL

ViViX™

PIXEL FOR PIXEL™

PFP-7/PFP-11

RUNCO

THE WORLD'S FINEST HOME THEATER PRODUCTS™

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PIXEL FOR PIXEL™

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THE WORLD'S FINEST HOME THEATER PRODUCTS™

The software installed in the **PFP-7/PFP-11** is protected by copyright laws and International copyright treaties, as well as other intellectual property laws and treaties.

IMPORTANT - READ CAREFULLY: This Runco License Agreement is a legal agreement between you (either an individual or a single entity) and Runco International for the Runco software product installed within the **PFP-7/PFP-11**. By using the **PFP-7/PFP-11**, you agree to be bound by the terms of this License Agreement. If you do not agree to the terms of this License Agreement, do not use the **PFP-7/PFP-11**; you may, however, return it to your place of purchase.

CONTENTS

Warnings and Safety Precautions

CAUTION:
To turn off main power, be sure to remove the plug from power outlet. 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 circut, s'assurer de retirer la fiche de la prise d'alimentation. La prise d'alimentation doit être installé 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.

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 is likely to 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 Réglement 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 **PFP-7/PFP-11.**
• Do not place any objects containing water or any other liquid on top of the **PFP-7/PFP-11.**
• Do not place the unit in direct sunlight, near heaters or in extremely dusty or humid locations
• Do not install this unit outdoors or otherwise exposed to the elements
• Do not place heavy objects on top of the unit
• If the power cord is damaged or frayed in any way, electrical shock and/or fire may result. Please 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 unit for any reason. If any problems arise with the unit, please contact a Runco dealer or Runco International for service. Removing the cover will void the warranty.

INTRODUCTION

General Description

Congratulations on your purchase of the **PFP-7/PFP-11** video processor with Vivix™ technology! This processor is designed to maximize the image quality of your fixed-pixel display or rear-screen television while adding an extra level of flexibility to your system. The **PFP-7/PFP-11's** Vivix™ processing techniques enable this processor to be used with virtually any fixed-pixel display from Plasmas, LCD projectors, DLP projectors and even D-ILA projectors, and will provide the most stunning image that your display can possibly deliver.

Vivix™ is a proprietary technique developed by Runco engineers to match the output resolution of the processor precisely to the display it will be used with. This precision processing technique resolves all the problems that conventional video processors have with fixed-pixel displays, which include pixel-tracking artifacts (jagged lines, moiré, jerky motion, etc.), too much overscan (significant loss of image) and even improper and disproportionate aspect ratios. The results of Vivix™ technology is an image that nearly rivals that of a CRT, while providing three geometrically-correct aspect ratios on a 16:9 or a 4:3 screen.

In addition to fixed-pixel displays, the 480p, 540p, 600p and 720p output options of the **PFP-7/PFP-11** is designed specifically for rear-screen high-definition capable televisions. These RPTV's are quite flexible by themselves, but often have lower-quality processors built in leaving the NTSC image much to be desired. The **PFP-7/PFP-11** will provide the best possible image from your RPTV, while providing all the other bene-fits that the Vivix™ technology provides including aspect ratio control. Finally, the **PFP-7/PFP-11** can be configured for either an RGB or a Component output, making this processor compatible with virtually every HD-capable RPTV on the market today.

Features and Benefits

The **PFP-7/PFP-11** have many great features and benefits that make it a flexible, high-quality processor. Its many benefits include:

- Vivix™ Technology, which maximizes image quality and flexibility of fixed-pixel displays.
- An adaptive 2-dimensional comb filter that greatly reduces artifacts when using a composite video signal as an input.
- A Luma edge enhancement circuit makes the edges of objects appear sharper without the ringing and noise increase associated with traditional sharpness circuits
- A Chroma edge enhancement circuit is included to compensate for lower chroma resolution found in composite and S-video.
- Inverse Telecine (3:2 pulldown) detection and processing allows the scaler to almost completely eliminate interlace artifacts associated with other scalers
- The controller can correctly scale anamorphic, letterbox and 4:3 formats to fit on a wide aspect-ratio screen, and scale anamorphic formats on a 4:3 screen
- A pass-through connector is supplied for routing HDTV or computer graphics directly to the display.
- An RS-232 input is provided for easy integration into the automated home theater environment
- A TBC (Time Base Corrector) circuit is provided for unstable sources such as VCR's.
- 12V outputs are provided for drop screens and screen masking.
- A simple 7-button remote controls all aspects of operation. One button source selection and aspect ratio control is also provided via the remote control.

FRONT AND REAR PANEL DESCRIPTIONS
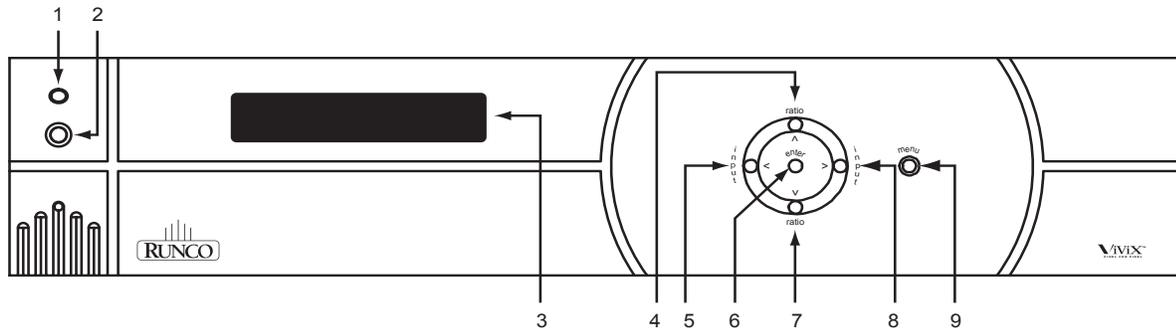
1. **IR RECEIVER**
   Receives the IR commands from the remote control.

2. **POWER BUTTON**
   Toggles the power on and off. For a discreet on or off command, you can use the direct access buttons on the remote control. **NOTE:** When the main AC power switch is first turned ON, the processor will go through an initiation cycle for approximately 15 seconds. The processor cannot be turned on or operated until the initialization is complete

3. **LED DISPLAY**
   Indicates the model number, current source, scan rate or resolution and aspect ratio.

4. **UP BUTTON**
   When no menus are present on-screen, the UP button will toggle you through aspect ratios in the following order:
   Standard (4:3) → Letterbox → Anamorphic
   When the menu is on-screen, the UP button will move the cursor up within the menu.
   When an adjustment item has been selected (i.e. brightness), the UP button will increase the value of that function.

5. **LEFT BUTTON**
   When no menu is present on-screen, the LEFT button will toggle you through the four different sources, in the order of:
   Pass-through → Component → S-Video → Composite

6. **ENTER BUTTON**
   When an item is highlighted on the On-Screen Display, the ENTER button will select the item.

7. **DOWN BUTTON**
   When no menu is present on-screen, this button will toggle you through the different aspect ratios.
   When the menu is on-screen, the down button will move the cursor down within a menu. When an adjustment function has been selected (i.e. brightness), the DOWN button will decrease the value of that function.

8. **RIGHT BUTTON**
   When no menus are present on-screen, the RIGHT button will toggle you through the four different sources, in the order of:
   Composite → S-Video → Component → Pass-through

9. **MENU BUTTON**
   Pressing the MENU button will bring up the main menu. If no action is taken within approximately 10 seconds, the menu will time-out (disappear). Also, if you are in an adjustment mode or function, pressing MENU will bring the menu back one level.
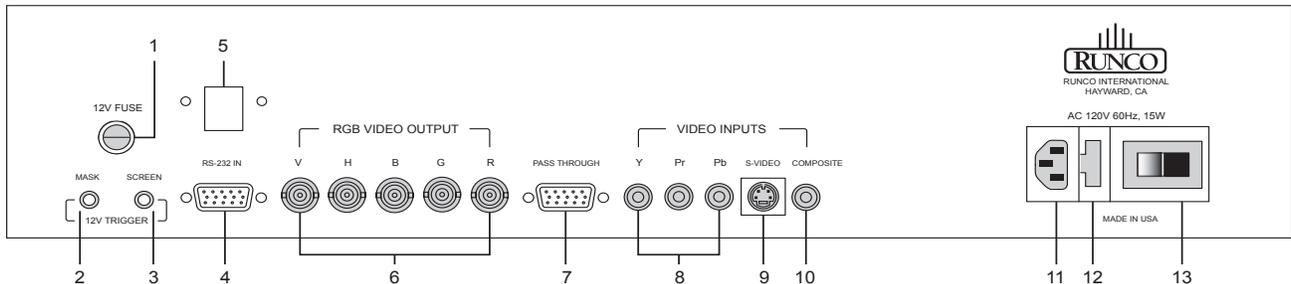
1. **12v Fuse**
   This fuse protects the 12v outputs from the MASK and SCREEN jacks.
   (Screen Fuse: 5mm x 25mm, AGC, 0.5A 250V Fast Acting, 250V, Fast Blow)

2. **Mask**
   This is a 12V output that is used to trigger masking on screens that have that capability.
   (For use on motorized screens only).

3. **Screen**
   This is a 12V output that is used to trigger the screen to drop.
   (For use on motorized screens only).

4. **RS-232 In**
   This is for systems using serial (RS-232) to control the **PFP-7/PFP-11**.

5. **Reserved for future use.**

6. **RGB OUTPUT**
   This is the main output of the **PFP-7/PFP-11**. The RGB Signal goes directly to the display; If
   component is used through the pass-through, then only the R (Pr), G(Y) and B(Pb) jacks will be active.
   Individually, the jacks are: V=vertical sync, H=horizontal sync, B=Blue, G=Green, R=Red.
   Note: If setting the output for 'sync on green' or 'component' (see Installation Menu section); disconnect the
   sync cables (H & V) from the processor. If using composite sync, the sync output will be on the 'H'
   connector.

7. **Pass-through**
   Anything input to this port will by-pass the processing of the **PFP-7/PFP-11** and be sent straight to the display.
   This is useful for computer graphics and HDTV signals which do not require processing.

8. **Component Input**
   This is the input for component video from sources such as DVD players.
   Note: The component output from a DTV decoder or a progressive-scan DVD cannot be used with this port;
   it must be input to the Pass-through port.

9. **S-Video Input**
   This is the input for S-video from sources such as Satellite receivers, S-VHS VCR's and DVD players.

10. Composite Video Input
This is the input for Composite video from sources such as Laser disc players, VCRs and other miscellaneous video sources.

11. Power Input
Plug in main power here.

12. 115 VAC Fuse
This is the main AC input fuse.(Main Fuse: 5mm x 20 mm, 500mA, 250v, Slow Blow)

13. Main Power Switch
Disconnects or applies main power to the processor.

REMOTE CONTROL DESCRIPTION _____

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

B. POWER BUTTON
Toggles the power on and off. For a discreet on or off command, you can use the direct access buttons (see 'J'). **Note:** When the main AC power switch is first turned ON, the processor will go through an initiation cycle for approximately 15 seconds. The processor cannot be turned on or operated until the initialization is complete.

C. UP BUTTON
When no menus are present on-screen, the UP button will toggle you through aspect ratios in the following order:
Standard (4:3) ➞ Letterbox ➞ Anamorphic
When the menu is on-screen, the UP button will move the cursor up within the menu. When an adjustment item has been selected (i.e. brightness), the UP button will increase the value of that function.

D. LEFT BUTTON
When no menus are present on-screen, the LEFT button will toggle you through the four different sources in the following order:
Pass-through ➞ Component ➞ S-Video ➞ Composite

E. DOWN BUTTON
When no menus are present on-screen, the DOWN button will toggle you through aspect ratios in the following order:
Anamorphic ➞ Letterbox ➞ Standard (4:3)
When the menu is on-screen, the DOWN button will move the cursor down within the menu. When an adjustment item has been selected (i.e. brightness), the DOWN button will decrease the value of that function.

F. RIGHT BUTTON
When no menus are present on-screen, the RIGHT button will toggle you through the four different sources in the following order:
Composite ➞ S-Video ➞ Component ➞ Pass-through

G. MENU BUTTON
Pressing the MENU button will bring up the main menu. If no action is taken within approximately 10 seconds, the menu will time-out (disappear). Also, if you are in an adjustment mode or function, pressing MENU will bring the menu back one level.
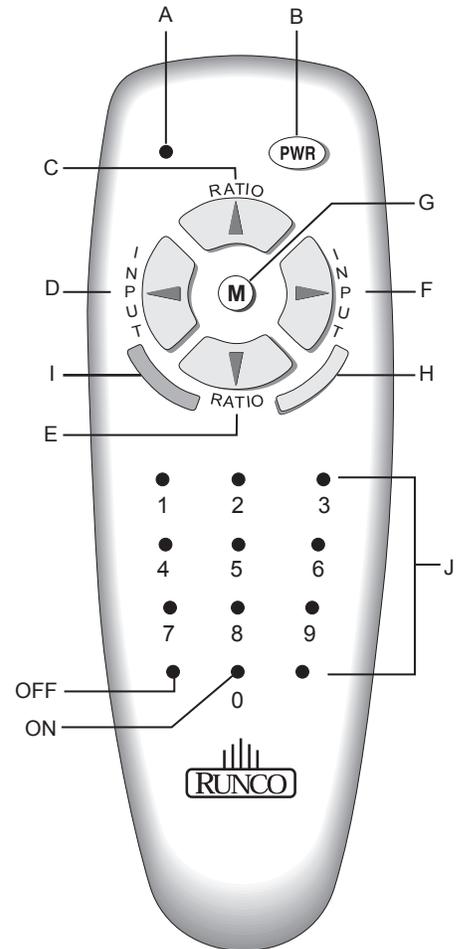
H. ENTER BUTTON
When an item is highlighted on a menu, pressing ENTER will select that item.

I. PROGRAM BUTTON
If the remote control loses its 'memory' as a result of weak or dead batteries, it must be re-programmed for the **PFP-7/PFP-11's** code set. To reprogram the remote, press the PROGRAM button followed by 0,1,3.
Note: Pressing Enter after typing in the code is not necessary.

J. DIRECT ACCESS BUTTONS
These buttons will allow you to directly access an aspect ratio, source, or turn the unit on or off without having to go through any menus. These buttons are:

1: Selects COMPOSITE video
2: Selects S-video
3: Selects COMPONENT video
4: Not used
5: Selects PASS-THROUGH
6: Enables or Disables the Installation Menu (see page 18)
7: Selects the ANAMORPHIC aspect ratio
8: Selects the STANDARD (4:3) aspect ratio
9: Selects the LETTERBOX aspect ratio
0: Turns the processor ON.
OFF: Also known as the button left of '0', this turns the processor OFF.

QUICK SET-UP GUIDE
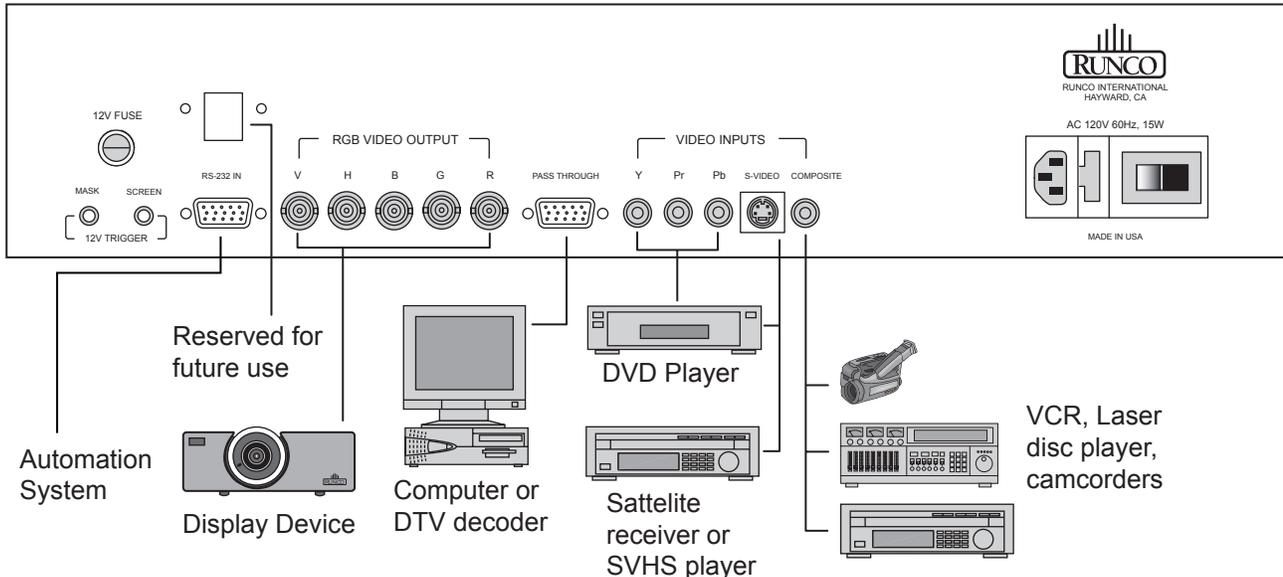
While there are many different ways to connect your source equipment to your **PFP-7/PFP-11**, the examples shown above are the most common.

• 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.

• S-VIDEO INPUT

S-video is the second-best type of signal that can be used, but is MUCH better than composite video. Using such sources as Satellite receivers, high-quality VCRs and DVD players (with no component output) will produce a MUCH cleaner and sharper signal.

• COMPONENT INPUT

Component video is the best type of 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.

• PASS-THROUGH

This input is used to 'pass-through' any high-definition or computer signals that do not require processing. The signal by-passes the **PFP-7/PFP-11's** processing and is sent directly to the display. The pass-through may be used for COMPONENT outputs from a DTV decoder, a progressive-scan DVD player or RGB outputs from a computer or other high-resolution sources.

Getting Started

Now that your **PFP-7/PFP-11** has been installed, it's time to get it configured for use in your system.
Please follow the procedures and recommendations below:

1. First, connect all sources (DVD, VCR, Satellite receiver, etc.) to the **PFP-7/PFP-11**, if this has not already been done. Also, ensure all sources are ON and functioning, if possible.
2. Connect the RGB (or component) output of the **PFP-7/PFP-11** to the display device it is to be used with. NOTE: It may be necessary to set the 'output format' and 'resolution' in the Installation menu to match the input type and scan rate of the display device it is to be used with (see page 19).
3. With everything properly connected, turn the **PFP-7/PFP-11** on, followed by the display device itself.
4. If the output scan rate and output format have not been optimized for the display device the processor will be used with, set them now (see page 19 for recommendations).
5. Next, set the 'screen type' in the installation menu, either 16:9 screen (for installations using widescreens or other display devices with a 16:9 aspect ratio (i.e. a plasma display)) or 4:3 screen for those displays using a 4:3 screen only.

Once the initial settings have been completed, the 'front panel settings' (color, tint, sharpness, etc.) can be adjusted for each aspect ratio. The calibration procedures for these adjustments are outlined in 'picture quality adjustments', page 15.

Overall Functional Description

The **PFP-7/PFP-11** has many useful purposes. It has many different scan rate outputs that can match most fixed-pixel displays, as well as most HD-capable rear-screen televisions. Also, the sync polarity and output type (RGB, Component, Sync on green, etc.) can be changed to meet the requirements of the display device, ensuring that the **PFP-7/PFP-11** will be fully compatible in all respects to just about every type of display.

In addition to being compatible with most displays, it also includes aspect-ratio control. This is extremely beneficial for those displays that do not have any type of aspect ratio control, as all movies can now be viewed in their native format instead of having to settle for 4:3.

So, how does the **PFP-7/PFP-11** work, anyways? In a nutshell, the **PFP-7/PFP-11** is an advanced processor known as a SCALER. A scaler takes the interlaced NTSC signal (such as that from a standard DVD player or VCR, for example), de-interlaces it, and then scales it to one of many selectable resolutions.
It is the proprietary Vivix™ technology that gives the **PFP-7/PFP-11** the ability to change not only scan rates or resolutions, but aspect ratios as well.

Compatibility

As mentioned, the **PFP-7/PFP-11** is compatible with many types of display devices. To ensure a display device is capable of working with the **PFP-7/PFP-11**, it must have the following specifications:

* Capable of a horizontal scan rate of at least 31.5 KHz
* Capable of a resolution of at least 854 x 480 (480p)
* Can accept RGB (separate or composite syncs, or sync on green), or component signals

In addition, the processor is designed to work properly on widescreens with an aspect ratio of either 1.78:1 (16:9) or 1.85:1, or any 4:3 screen. The processor is not designed to provide aspect ratio control for 2.35:1 screens.

For input signals, the **PFP-7/PFP-11** can accept NTSC or PAL signals from most typical sources. This includes interlaced signals from standard DVD players, Satellite receivers, VCRs, Laser Disc players, camcorders and other similar equipment. For higher-resolution signals such as a computer, high-definition decoder or progressive DVD players, these signals MUST be connected to the Pass-through port. *The **PFP-7/PFP-11** will not accept progressive signals on its Component input port (i.e. progressive DVD players).*

Ensure that your display device is compatible with any high-resolution signal you input to the pass-through port. **NOTE:** The **PFP-7/PFP-11** will not process any signal on its pass-through port; it will simply loop the signal directly to its output. Also, the pass-through port will not convert component signals to RGB signals; component signals input to the pass-through port will be output as component signals.

NOTE: The PFP-7/PFP-11 will not accept PAL signals for the 854 x 480, 480p or 540p resolutions. All other resolutions are both NTSC/PAL compatible.

MENU DESCRIPTION AND NAVIGATION ___

MAIN MENU

```
> COMPOSITE
  S-VIDEO                    ──────►  Source selection and
  COMPONENT                           picture quality adjustments
  PASS THROUGH

  ASPECT RATIO
  INSTALLATION              ──────►  Aspect ratio selection

                           ──────►  See "installation" section
```
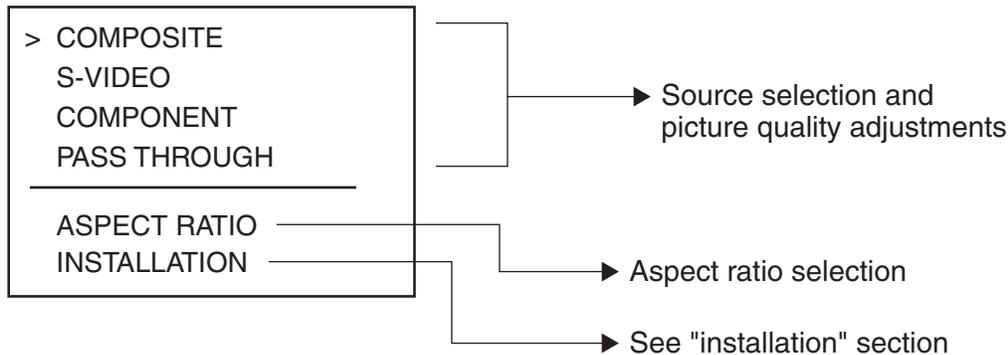
When the MENU button is pressed on either the remote control or the front panel, the main menu will appear on-screen. An example of the main menu is shown above.

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

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; see page 10).

If pass-through is selected, note that no on-screen menus will be displayed since the signal is simply being 'looped' directly to the output. When pass-through is the selected source, pressing MENU will 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.
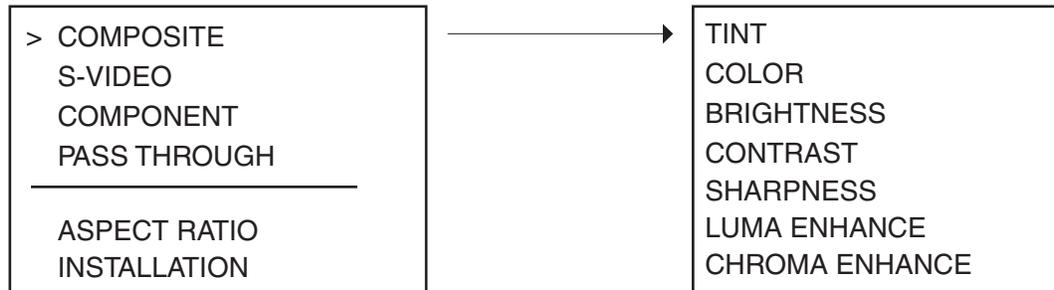
Aspect Ratio provides selection of one of three aspect ratios: Anamorphic, Letterbox or standard 4:3. To select an aspect ratio via the main menu, press either the up and down buttons on the remote or front panel, highlight ASPECT RATIO and press ENTER. The aspect ratio menu will then appear with the three 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 (recommended; see page 10).

Installation is where the scan rate and sync types can be adjusted, as well as screen types, 'side bar' levels, image shift and blanking controls. A full description of this menu is on page 18.

NOTE: If INSTALLATION does not appear on the main menu, see page 18 for an explanation on how to access the Installation menu.

MAIN MENU

```
> COMPOSITE              TINT
  S-VIDEO                COLOR
  COMPONENT              BRIGHTNESS
  PASS THROUGH           CONTRAST
  _____              SHARPNESS
  ASPECT RATIO           LUMA ENHANCE
  INSTALLATION           CHROMA ENHANCE
```

Picture quality adjustments (also known as "Front Panel Controls") are the controls that change different parameters of the image such as the amount of color, black level, etc. While these adjustments can be set to suit the needs of the user, there is a way to set these properly. This section will describe what each function does and how to adjust them properly.

To access the picture quality adjustments, press MENU, highlight the active source (indicated by the arrow) and press ENTER. The picture quality sub-menu will then appear (see above).

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.

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.

NOTE: For many display devices, a BLUE FILTER must be used so only the blue color bars can be seen; if no blue color filter is available, see if the display device has the ability to mute (turn off) the red and green colors via its menu structure (most CRT projectors have this feature). Blue filters are provided with the Video Essentials or AVIA test DVDs, or can be purchased from the Imaging Science Foundation (www.imagingscience.com).

white | yellow | cyan | green | magenta | red | blue

Tall color bars

Short color bars
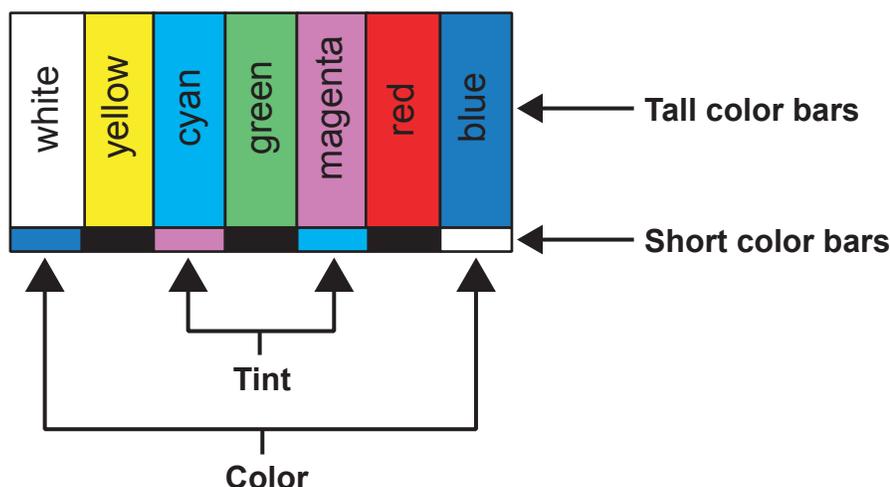
Tint

Color

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 match the middle short color bars (see color bar drawing).

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 match the outer short color bars (see color bar drawing).

For setting *CONTRAST* and *BRIGHTNESS*, please refer to the PLUGE pattern below:
CONTRAST adjusts the white level of the image. To adjust this properly for CRT projectors, adjust

Set contrast untill there is no 'blooming' in this bar.

Below black

Above black
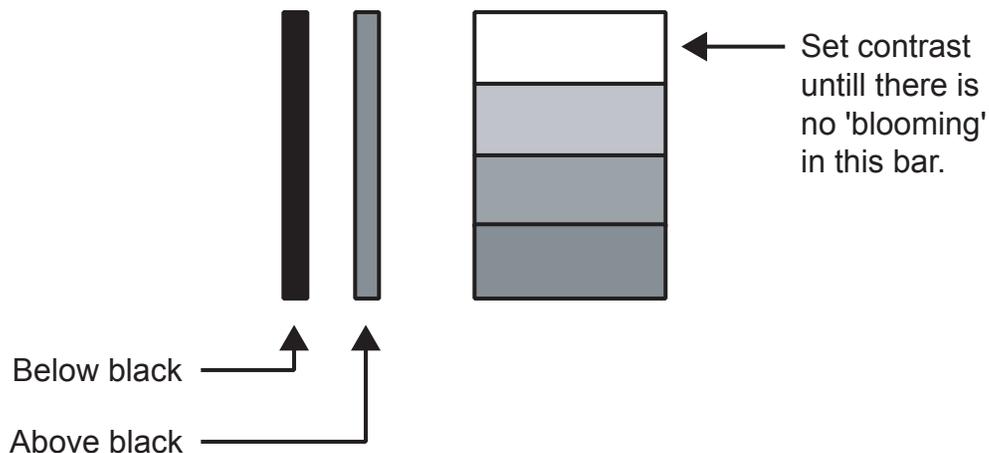
CONTRAST until there is no blooming (or distortion) in the brightest bar in the PLUGE pattern (see above). For Fixed-pixel displays, adjust contrast until there is a distinct definition between the two brightest bars.
NOTE: For best results, Runco recommends that CONTRAST be set to '0' or very close to it.

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.
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.

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.

LUMA ENHANCE acts as an edge enhancement, especially around black to white transitions in the image. Essentially, this has the same characteristics as sharpness but affects the edges of objects far more that the rest of the image.

FREQUENCIES HIGH/LOW affect the overall range of the LUMA ENHANCE feature. For example, if using a lower-quality video source such as a VCR, the FREQUENCIES should be set to LOW. For a good quality source such as a DVD player, set FREQUENCIES to HIGH. To set FREQUENCIES, press ENTER while LUMA ENHANCE is on-screen.

CHROMA ENHANCE acts as an edge enhancement, especially around color transitions in the image. Essentially, this has the same characteristics as sharpness but affects the edges of objects far more that the rest of the image.

FREQUENCIES HIGH/LOW affect the overall range of the CHROMA ENHANCE feature. For example, if using a lower-quality video source such as a VCR, the FREQUENCIES should be set to LOW. For a good quality source such as a DVD player, set FREQUENCIES to HIGH. To set FREQUENCIES, press ENTER while CHROMA ENHANCE is on-screen.

Installation Menu

The Installation menu is where you can adjust the scan rate and sync type, as well as set the type of screen (4:3 or 16:9), shift the image or set blanking, and even set the level of the 'sidebars'.
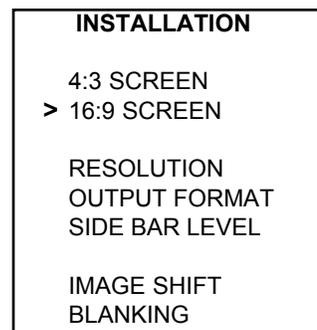
When the **PFP-7/PFP-11** is turned on for the first time, the INSTALLATION item will not appear in the main menu. To enable the INSTALLATION menu, there are two options:

· With the processor *ON* and no menus on-screen, simultaneously press the *ENTER*, *UP* and *LEFT* buttons (you don't need to hold them down). Release the three buttons and press MENU, ensure INSTALLATION is now on the bottom of the main menu.

· With the remote control, press button 6 (with no menus on-screen).
After pressing '6', press *MENU* and ensure INSTALLATION is now on the bottom of the main menu.

After INSTALLATION has been accessed, press *MENU*, highlight INSTALLATION and press *ENTER*. This will bring up the INSTALLATION MENU, shown below:

```
         INSTALLATION

         4:3 SCREEN
       > 16:9 SCREEN

         RESOLUTION
         OUTPUT FORMAT
         SIDE BAR LEVEL

         IMAGE SHIFT
         BLANKING
```

Screen Type

When you are installing the processor for the first time, the first order of business is to define what type of screen will be used with this system. If a 1.78:1 (16:9) or 1.85:1 screen is used, highlight 16:9 SCREEN and press ENTER. If a standard 4:3 screen is installed, highlight 4:3 SCREEN and press enter. However, if your display is a native 16:9 aspect ratio (such as most plasmas), you only need to select the actual resolution of the device. The PFP-7/PFP-11 will automatically switch itself to the proper mode.

The purpose of defining the screen type is to tell the processor how to create aspect ratios (see page 27 for a definition of aspect ratios). For example, on a 16:9 screen, the letterbox and anamorphic aspect ratios will use the entire 16:9 screen, and the 4:3 aspect ratio will be displayed in the center of the 16:9 screen (you'd have 'black bars' on the left and right sides of the image).
On the other hand, on a 4:3 screen, the 4:3 aspect ratio would fill the screen, but the letterbox and anamorphic aspect ratios would be displayed in the center of the screen vertically (there would be 'black bars' on the top on bottom of the image).

Important note on aspect ratios for 4:3 screens: If 4:3 SCREEN is selected, the only way the processor will provide all three aspect ratios is if one of the FIXED PIXEL scan rates are selected (i.e. 1024 x 768). The processor will NOT provide three aspect ratios on a 4:3 screen if 480p, 540p, 600p or 720p are selected. The reason for this is that CRT projectors will provide the best resolution if two separate memories are created by the projector itself, one for anamorphic, one for full 4:3. This way, the CRT projector can provide the maximum number of lines of resolution on either aspect ratio since it is simply compressing a 4:3 image to an anamorphic image. Therefore, Runco recommends that the CRT projector create the aspect ratios on 4:3 screens (if possible) for best results.

For fixed pixel displays, the number of pixels cannot be changed nor do many of the displays provide the ability to create aspect ratios. Therefore, the **PFP-7/PFP-11** will provide three full aspect ratios for fixed pixel displays (WHEN a fixed-pixel scan rate is selected) for use on 4:3 screens.

In any event, if 16:9 SCREEN is selected, the **PFP-7/PFP-11** will provide three aspect ratios regardless of the selection of the scan rate type or display device used.

Scan Rate/Resolution

SCAN RATE is how many lines of resolution can be output in a single image. For example, 540p means that there are 540 visible lines of resolution, and 'p' means the signal is PROGRESSIVE. A Progressive output is where ALL lines of resolution will be displayed during each frame as opposed to an INTERLACED signal, which only displays half the lines of the frame during one field and the other half the next. Progressive outputs are far better than Interlaced outputs as all lines of resolution are always displayed, and fixed-pixel displays produce far better results when using a progressive signal. The fixed-pixel outputs are also progressive, but are referred to in PIXELS (Picture Elements) as opposed to the actual number of lines of resolution. This is because fixed-pixel displays are referred to in their native resolution in pixels, i.e. 1024 x 768 (meaning 1024 vertical rows of pixels and 768 horizontal rows of pixels).

Selecting a scan rate (resolution) for your display device is an extremely important task. The first thing that should be done is to determine what resolution will provide the best results for your display. The following are some guidelines that will assist you in determining the best possible results for your type of projector.

Selecting A Resolution (Scan Rate)

To select a scan rate, first determine which type of display will be used with the **PFP-7/PFP-11** (see 'Fixed pixel displays' or 'CRT displays' below). If the display is a FIXED PIXEL display, you'll want to use one of the FIXED PIXEL scan rates. If using a CRT projector, you'll want to use one of the CRT scan rates.

To select a resolution, follow this procedure:

· Press MENU and ensure 'INSTALLATION' is on the bottom of the menu. If it's not, enable the INSTALLATION menu using the procedures on page 17.
· Using the up or down arrow buttons, highlight INSTALLATION and press ENTER.
· Once the INSTALLATION menu is on-screen, use the up or down arrow buttons to highlight SCAN RATE and press ENTER.
· Note that at the top of the SCAN RATE menu that it will say either "PROGRESSIVE" or "SCAN RATE-FIXED PIXEL"; if it indicates the wrong mode for your system (i.e. you have a CRT projector but the menu says "FIXED PIXEL"), simply highlight the word "MORE…" on the bottom of the menu and press ENTER. This will toggle you to the appropriate scan rate type for your display.
· Next, highlight the desired SCAN RATE and press ENTER. The **PFP-7/PFP-11** will immediately go to that scan rate. To confirm your scan rate selection, you must press MENU within ten seconds or the processor will revert to the scan rate it was at before you made the selection.
  Runco recommends that you ensure your display device produces an image before confirming the scan rate. If it does not, allow the processor to revert to its previous scan rate and consult the owner's manual of your display to see what it's scan rate or resolution capabilities are.

SCAN RATE menus:

Note that the arrow indicates the currently selected scan rate (854 x 480, in this example):

PFP-7

Fixed Pixel Resolutions   **CRT Scan Rates**

4:3 Device		**Progressive**
800 x 600		480p
1024 x 768		540p
		600p
16:9 Device		720p
> 854 x 480		
1280 x 720		More...
1280 x 768		
1024 x 1024		
More...		

PFP-11

Fixed Pixel - 4:3 Device   **CRT Scan Rates**

4:3 Device		**Progressive**
800 x 600		480p
1024 x 768		540p
1280 x 1024		600p
1366 x 1024		720p
16:9 Device		More...
> 854 x 480		
1280 x 720		
1280 x 768		
1366 x 768		
1024 x 1024		
More...		

Fixed Pixel Displays

A fixed pixel display can be one of several types of displays, including Plasma (flat panel) displays, DLP™ projectors, LCD projectors and D-ILA projectors. Selecting a scan rate for these types of displays is actually quite easy since the display has a fixed resolution, commonly known as the display's native resolution.

To determine which scan rate output to use, first determine your display's native resolution.
For example, if you have a DLP™ or an LCD projector with a native resolution of 1024 x 768, set the SCAN RATE for 1024 x 768.

Runco recommends that for fixed-pixel displays the output scan rate ALWAYS be set to match the native resolution of the display for best results. Selecting a resolution output higher or lower than that of the native resolution of the display will cause the display to scale the image, resulting is decreased resolution and performance.

If you have a fixed-pixel display and its native resolution does not match any of the resolution outputs of the **PFP-7/PFP-11**, try different resolutions to see which one gives you the best picture quality.

This feature allows you to change the sync polarity or type of output of the **PFP-7/PFP-11**.
The default output is positive horizontal sync, positive vertical sync (+ Horizontal + Vertical). However, some display devices work better with some sync polarities and some may not be compatible with others. There is not a 'best type of sync' to use (unlike the best scan rate), it's just that each display is designed differently and have their own requirements. Consult the owner's manual to see what type of sync or sync polarity is recommended for your display device.

OUTPUT FORMAT (SYNC)

- Horizontal   - Vertical
+ Horizontal   - Vertical
- Horizontal   + Vertical
➤ + Horizontal   + Vertical
C SYNC
Sync On Green
Component
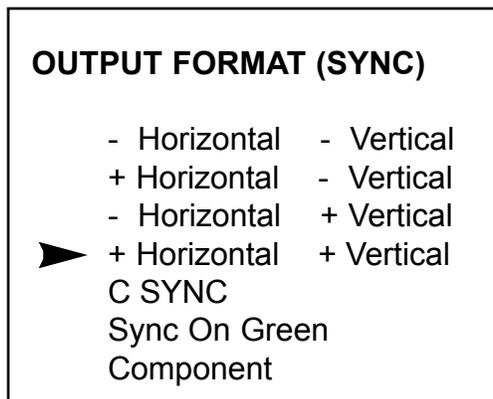
OUTPUT FORMAT Menu
Note that the arrow indicates the currently selected sync output
(Positive horizontal, Positive Vertical in this example).

Besides sync polarity options, you may also choose COMPOSITE SYNC, SYNC ON GREEN or COMPONENT.

COMPOSITE SYNC is the combination of horizontal and vertical syncs on one connector, which is output on the H sync connector on the rear of the processor (see page 8). Many projectors have a 'four-wire' RGB input (as opposed to the more common five-wire), meaning that they must have composite sync to function.

SYNC ON GREEN is where the horizontal and vertical syncs are actually combined with the green signal. Some older displays used sync on green as opposed to RGB and separate or composite syncs.

COMPONENT (Y, Pb, Pr) is a bit different from RGB; instead of the video and color information being combined on the Red, Green and Blue outputs and having the sync on separate cables (H and V), Component is actually the Luminance (the black and white part of the image) on the 'Y' output (which also includes the sync information), and the color information on the Pb (blue) and Pr (red) outputs. Many types of displays, especially rear-screen projection televisions (RPTV's), use Component inputs exclusively and do not have RGB inputs.

Side Bar Level

Some displays, especially phosphor-based displays such as CRT projectors and Plasma (flat panel) displays, can be 'burned' by still-images or otherwise not using the full display or raster. Examples of this include ATM's, where the bank logo is permanently burned into the display. This is also the reason why most projector manufacturers strongly recommend against the use of video games with projection televisions, as many video games have still images in them.

Some types of projectors are not susceptible to burns, like DLP™ projectors. Since a DLP™ projector uses tiny mirrors to create the image, burning the image is not a concern as the reflectivity of the mirrors does not decay like the phosphor in a CRT or Plasma.

Besides still images, using a 4:3 image on a widescreen display could cause a '4:3 burn' (see below):

'4:3 burn'
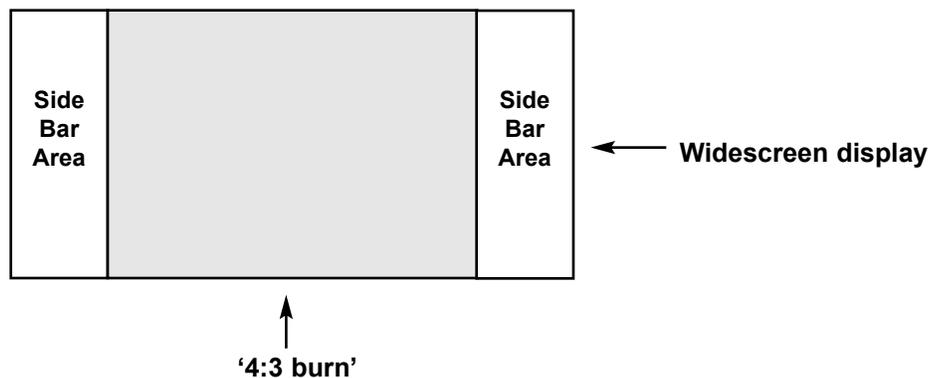
The example above shows what would happen on a widescreen display if a small 4:3 image were used more often than widescreen images. This happens most frequently with CRT projectors or RPTV's, or Plasma displays.

To minimize this problem, the **PFP-7/PFP-11** can provide SIDE BARS, which will put grey bars up on either side of a small 4:3 image (see 'side bar area' in the drawing above). This illuminates the otherwise unused portion of the display, minimizing a potential 4:3 burn.

SIDE BAR LEVEL is the amount of illumination in the side bars. The goal is not to make them so bright that they are much brighter than the 4:3 image itself (which could cause a reverse 4:3 burn), but not too dim where they cannot be effective. While there is not a recommended level, Runco recommends keeping the side bar level at a moderate level, approximately the same as the average light used on the 4:3 portion of the image.

NOTE: SIDE BAR LEVEL is only active on 16:9 screens. For 4:3 screens, side bar level is not active.

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 with Plasmas and CRT-based televisions.**

To use side bar level, it will be necessary to 'unblank' the left and right sides of the image. Please follow this procedure to set side bar level:

· Ensure an active source is displayed on the screen or display.
· Select the standard (4:3) aspect ratio. NOTE: Ensure 16:9 screen is selected in the INSTALLATION menu.
· Access the INSTALLATION menu, highlight BLANKING and press ENTER.
· Highlight LEFT with the up or down arrow buttons, then press and hold the left arrow button. You will begin to see the sidebar slowly appear on the left side.
  Continue holding down the left arrow button until the left sidebar fills the left side of the screen.
· When the left side is fully unblanked, perform the same procedure for the right side.
· Once both sides are fully unblanked, you can set the level of the sidebars. Highlight SIDE BAR LEVEL on the INSTALLATION menu and press ENTER. Use the up arrow button to increase the illumination of the side bars, or the down arrow to decrease their illumination. NOTE: It is recommended that an active image be displayed on-screen, and the level of the sidebars be set to match the average amount of illumina tion on the 4:3 portion of the image.

```
Runco PFP-7

Side Bar Level                 013
```

Image Shift

IMAGE SHIFT moves the entire image up, down, left or right. If the image is slightly off-center on-screen after installation, using IMAGE SHIFT can center the image on your screen or display.

While using IMAGE SHIFT will not cause any problems with your display, it is possible to use too much image shift, which could cause the image to shake or disappear. Therefore, Runco recommends that image shift be done with the display device itself whenever possible.

```
Image Shift

        ↑
    ←       →
        ↓

Hstart: 268
Vstart: 131
```
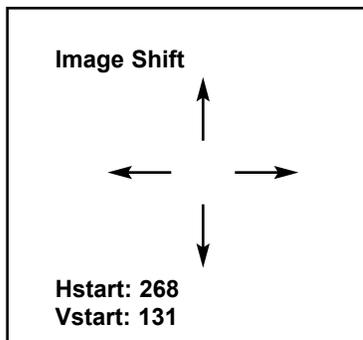
Blanking

The **BLANKING** function allows you to 'cut off' part of the image to fit the screen properly, or to elimi-nate anomalies on the extreme outsides (usually the top) of the image. This can be done to the top, bottom, left or right sides individually.

```
Blanking

Top             131
Bottom          707
Left            241
Right           1292
```

To adjust **BLANKING**, highlight the desired area you wish to blank (top, bottom, left or right), and use the left and right arrows to make the adjustment.

Most CRT projectors themselves have blanking controls, and it is recommended that you use the controls on the projector as opposed to the processor, if possible. In the event that your display device does not have blanking controls, however, use the blanking controls provided in the processor.

System Reset

In the event that your **PFP-7/PFP-11** appears to have a software problem, or adjustments have been made so far out of range that the image is no longer on-screen or discernable, you can reset the processor back to factory values. This sets ALL settings back to factory values, so any adjustments made previously will be lost.

To reset your PFP-7/PFP-11, follow this procedure:

- · Turn off the MAIN POWER switch on the back of the processor
- · Hold down the DOWN ARROW button, and turn the MAIN POWER SWITCH back on. Continue holding the down arrow button until the LED on the front panel blinks, then release the down arrow button.

Once this is done, your processor has been completely reset to factory values.
After resetting the unit, Composite video will be the active source.

SYSTEM RESET is not on any of the menus; it must be performed using the instructions above.
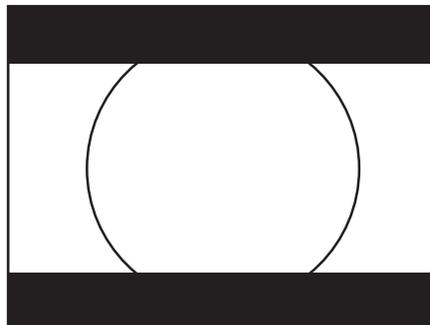
ASPECT RATIOS

An 'aspect ratio' is simply the ratio of the width vs. the height of the screen. For example, the current aspect ratio standard is 4:3 (or 1.33:1), where the image is 4 units wide and 3 units tall.


3 units tall

4 units wide
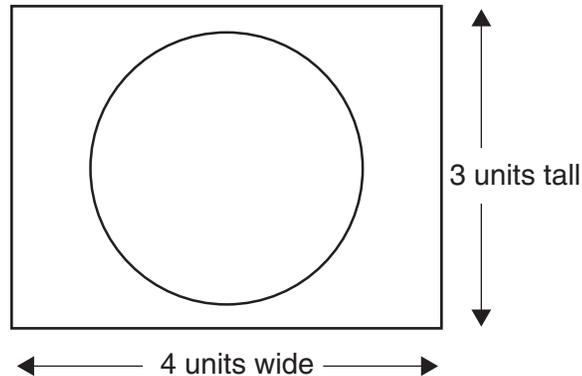
All of our 'regular' televisions are this aspect ratio. You have probably noticed that occasionally you'll watch a movie that does not fill the screen vertically. This is because the movie was filmed in WIDESCREEN (letterbox), and the result is 'black bars' above and below the image:


Obviously, watching a movie like this does not lend itself to a truly cinematic experience!
This is why Runco invented the first-ever multiple aspect-ratio projection system back in 1991, so true movie-lovers can watch actual widescreen (letterbox) movies on a WIDESCREEN!

A WIDESCREEN can be a number of aspect ratios; many movies are either 1.85:1 or 2.35:1, and HDTV is always 1.78:1 (16:9). The way we create a widescreen (or LETTERBOX) aspect ratio is to take a full 4:3 image, then 'blank' (or cut off) the top and bottom so the displayed image is in a widescreen format. For movies recorded in 'letterbox', there would be no information above and below the screen anyways, so we're not losing any of the picture. However, if you were to watch standard television broadcast this way, you would lose some information (see next drawing).

Active image area
(Actual screen area)

Blanked (cut off)
areas
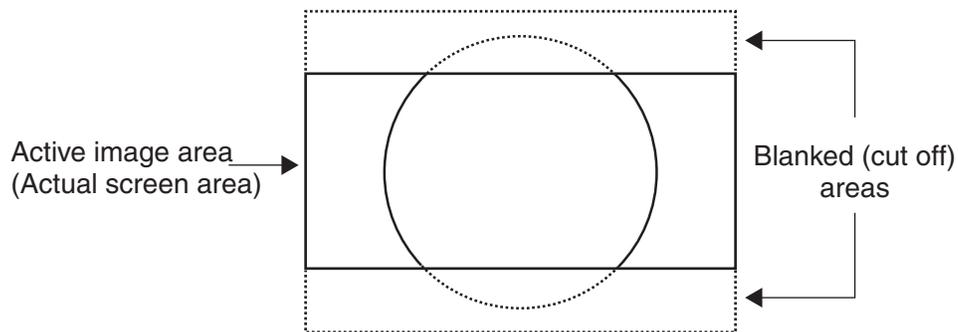
As you can see, our screen in this example is a 1.85:1 ratio. The dashed lines show the area that we 'blanked'. If you recall, watching a letterbox movie on a 4:3 screen gave us black bars; therefore with letterbox movies, we're not losing any information!

The 'other' type of widescreen is called 'ANAMORPHIC'. The image is still a widescreen format, but instead of 'blanking' the top and bottom, we simply reduce the overall height of the image:
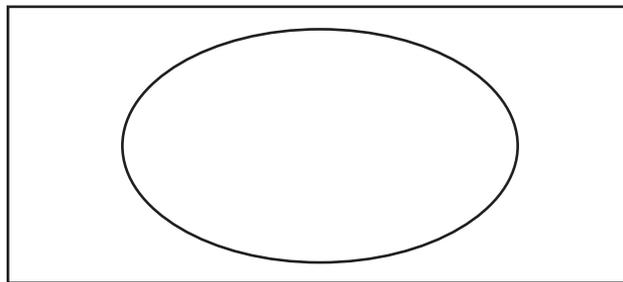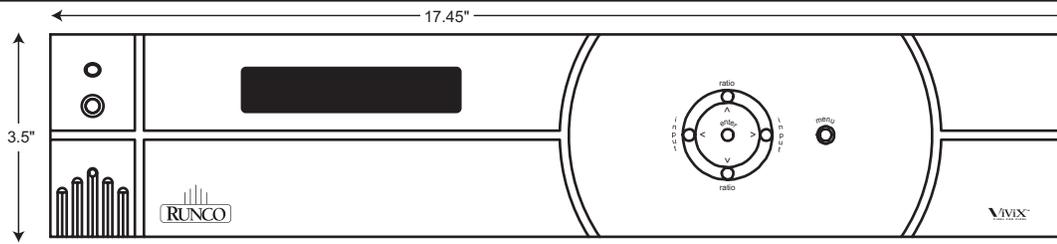

As a result, all objects will be 'short and fat' (like the circle above), right? Well, not if you're using software that is anamorphic. Most (but not all) DVD movies have an anamorphic option.

Anamorphic material will always produce a better image when using a high quality scaler such as the **PFP-7/PFP-11.** The reason is that you will actually get more lines of resolution (and ultimately more detail) when using anamorphic titles. Basically, a TV image is made of 480 lines. When using LETTERBOX (the drawing at the top of the page), we're 'throwing away' information by blanking the top and bottom. The end result is that there will only be around 360 lines of information on the screen and 480 with anamorphic.

DIMENSIONS

Front Panel

17.45"

3.5"

RUNCO

ratio
^
input   enter   input
<   >
v
ratio

menu

Vivix

Rear Panel

17"

3.025"

RUNCO
RUNCO INTERNATIONAL
HAYWARD, CA

12V FUSE

RS-232 IN

RGB VIDEO OUTPUT

V H B G R

PASS THROUGH

VIDEO INPUTS

Y Pr Pb S-VIDEO COMPOSITE

AC 120V 60Hz, 15W

MASK SCREEN

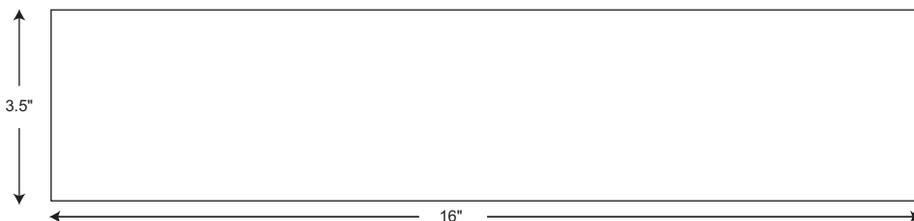12V TRIGGER

MADE IN USA

Top

17"

16"

17.45"

Side

3.5"

16"
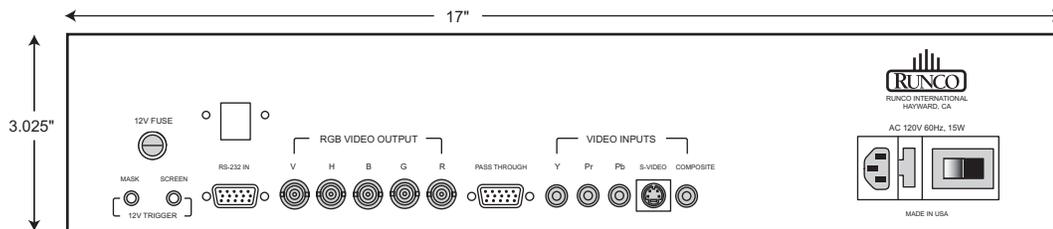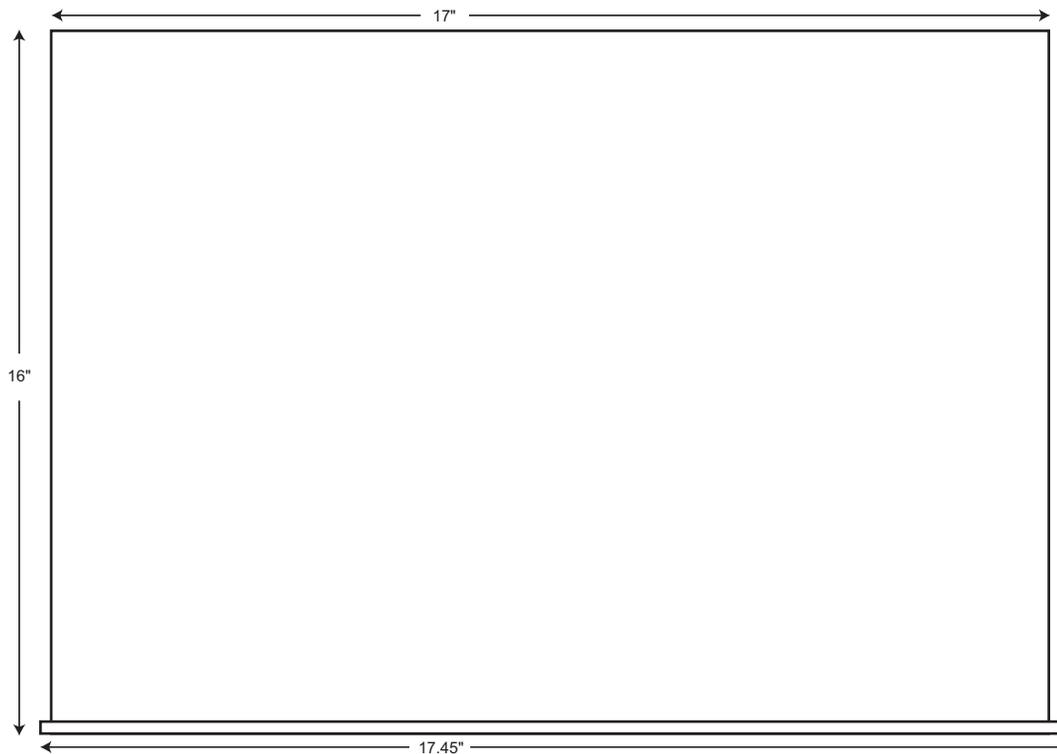
RS-232 COMMUNICATIONS ⸻⸻⸻⸻⸻⸻⸻

General Information

Baud rate: 9600 (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 30).
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 30,ANAMORPHIC)

NOTE: In between commands, a comma must be used; a comma or space may be used in
        between a command and its value.

Other notes:

- For command strings, a maximum of 255 characters can be used in a single string.
- If it is necessary to input multiple commands, they should all be together in a single string.
  Inputting commands one at a time requires a 15 second delay between commands, as the
  information is stored into non-volatile memory after each command.

- For values not automatically stored (see next paragraph), the command "!STORE" must be
  sent in order for the **PFP-7/PFP-11** to keep the settings. Otherwise, the values will be
  considered temporary and will revert to their stored settings upon source change or power-up.

- The "Value stored" column refers to a command that is either automatically stored or if it must
  be manually stored with the "!STORE" command.

- 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-232 COMMANDS

COMMAND	PARAMETER (min/max)	Value stored?	DESCRIPTION
ON	NA	NA	Turns 4404 on
OFF	NA	NA	Turns 4404 off
DISPLAY	0/4	YES	Adjusts the brightness of the front panel display
COMPOSITE	NA	YES	Selects the Composite Video input
SVIDEO	NA	YES	Selects the S-Video Input
COMPONENT	NA	YES	Selects the Component Video input
PASSTHRU	NA	YES	Selects the Pass-through 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
TINT	-127/127	NO	Sets a value for tint
COLOR	-127/127	NO	Sets a value for color
AGCCOLOR	0/1	NO	0=Disable Color AGC 1=Enable Color AGC
BRIGHTNESS	-127/127	NO	Sets a value for brightness
CONTRAST	-127/127	NO	Sets a value for contrast
AGCCONTRAST	0/1	NO	0=Disable Contrast AGC 1=Enable Contrast AGC
SHARPNESS	0/255	NO	Sets a value for sharpness
CHROMAHIGH	0/127	NO	Sets a value for high-frequency chroma edge enhancement
CHROMALOW	0/127	NO	Sets a value for low-frequency chroma edge enhancement
LUMAHIGH	0/127	NO	Sets a value for high-frequency luminance edge enhancement
LUMALOW	0/127	NO	Sets a value for low-frequency luminance edge enhancement
CSYNC	NA	YES	Selects the Composite Sync output
SYNCGREEN	NA	YES	Selects the Sync on Green output
SYNCCOMPONENT	NA	YES	Selects the Component output
+H+V	NA	YES	Selects positive horizontal and positive Vertical sync
+H-V	NA	YES	Selects positive horizontal and negative vertical sync output
-H+V	NA	YES	Selects negative horizontal and positive vertical sync output
-H-V	NA	YES	Selects negative horizontal and negative vertical sync output

COMMAND	PARAMETER (min/max)	Value stored?	DESCRIPTION
SR800X600	NA	YES	Selects the 800 x 600 scan rate
SR854x480	NA	YES	Selects the 854 x 480 scan rate
SR1024X768	NA	YES	Selects the 1024 x 768 scan rate
SR1024x1024	NA	YES	Selects the 1024 x 1024 scan rate
SR1280x720	NA	YES	Selects the 1280 x 720 scan rate
SR1280X768	NA	YES	Selects the 1280 x 768 scan rate
SR1280X1024	NA	YES	Selects the 1280 x 1024 scan rate (PFP-11 only)
SR1366x768	NA	YES	Selects the 1366 x 768 scan rate (PFP-11 only)
SR1366x1024	NA	YES	Selects the 1366 x 1024 scan rate (PFP-11 only)
SR480P	NA	YES	Selects the 480p scan rate
SR540P	NA	YES	Selects the 540p scan rate
SR600P	NA	YES	Selects the 600p scan rate
SR720P	NA	YES	Selects the 720p scan rate
!STORE	NA	YES	Stores the current set of values (all values) into non-volatile memory
!RESTORE	NA	YES	Restores the stored values
!FACTORY	NA	YES	Restores all values to factory default levels
!STATUS	NA	NA	Asks the 4404 to provide the hardware information, current values and system status to the automation system
!RESTART	NA	NO	Restarts the 4404 (same as turning it on and off)
!ECHO	NA	NO	Enables the 4404 to echo back commands and values to the automation system
!NOECHO	NA	NO	Disables the 4404's character echoing
!INSTALLMODEOFF	NA	NA	Disables the Installation menu (removes it from the main menu)
!INSTALLMODEON	NA	NA	Enables the Installation menu (enables it on the main menu)
!MODEL	NA	NA	Makes the front panel display the model number
!PANELTEST	NA	NA	Makes the front panel display a test sentence

SPECIFICATIONS

Inputs:	(1) Composite, (1) S-video, (1) Component, (1) Pass-through
Input standards:	NTSC (all scan rates), PAL (all scan rates except 480p, 540p and 854 x 480)

Resolution:

PFP-7	PFP-11	
852 x 480	852 x 480	480p
800 x 600	800 x 600	540p
1024 x 768	1024 x 768	600p
1024 x 1024	1024 x 1024	720p
1280 x 720	1280 x 720	
1280 x 768	1280 x 768	
480p	1280 x 1024	
540p	1366 x 768	
600p	1366 x 1024	
720p		

Bandwidth:	Composite, S-Video and Component inputs: 5.5 MHz, Pass-through: 100 MHz
Power Requirements:	100-120 VAC, 50/60 Hz (200-240VAC, 50/60 Hz, export version)
Power Consumption:	15W
Control Options:	RS-232, IR, Front Panel
Operating Environment:	41°-95°F (5°-35° C), 0-90% humidity, Non-condensing
Dimensions:	Width: 17.45 in./443.23 mm Depth: 16 in./406.40 mm Height: 3.5 in./88.90 mm
Weight:	16 lbs./7.26 kg
Safety Regulations:	Complies with UL, FCC Class 'B', CE, C-tick

Supplied Accessories

• Remote Control w/ 2 AAA Batteries

• Power Cord

• User's Manual

RUMA-006200 rev 04-01

RUNCO

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