



Native Rate Series NRS-DVI Digital Video Processor

Installation and
Operations Manual
NTSC Model


FAROUJIA
PICTURE PLUS™

QUICK START OPERATION MENU

QUICK START INSTRUCTIONS

The NRS-DVI requires only a few adjustments to be set for proper operation. However, since the processor must be integrated with a display device, and the settings on one will affect the other, careful attention must be made to the settings on both products.

CONNECTIONS

Read the complete Owner's Manual for the NRS-DVI before installation.

Review the owner's manual of the display. Most display devices require specific settings to properly integrate with an external processor.

Be sure to connect all sources to the proper inputs of the NRS-DVI.

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

Connect the proper cables from the output of the NRS-DVI to the display device. Be sure the cables are not crossed.

NRS-DVI SETUP

- Plug the processor into the wall power. The unit will go through initialization identifying the output resolution.
- Press the Menu button on the remote for five seconds to enter the Setup menu.
- Select Digital (DVI) or Analog (BNCs) output
- Select output type when using the analog output. RGBHV is recommended.
- Composite Sync on H and Sync on Green should be Off.
- Select the screen shape of your display.

DISPLAY POSITION AND ALIGNMENT

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

IMAGE ALIGNMENT

The final step is optimizing the image. Use a test pattern DVD to optimize the display and processor.

Set the brightness and contrast using the controls in the display.

Adjust the gray scale of the display using the color temperature controls in the display.

Reduce the detail or sharpness control in the display to 0 or 1 (if available).

Using video material, adjust the Detail on the NRS-DVI. Use of the Detail circuit is very depended on the quality of the material being viewed. High quality sources need less detail. DVDs or satellite sources that are poor quality (compression artifacts) can be cleaned up by reducing the detail level. Low bandwidth sources such as VHS can be improved by increasing the detail. Customized settings can be stored in the User Presets.

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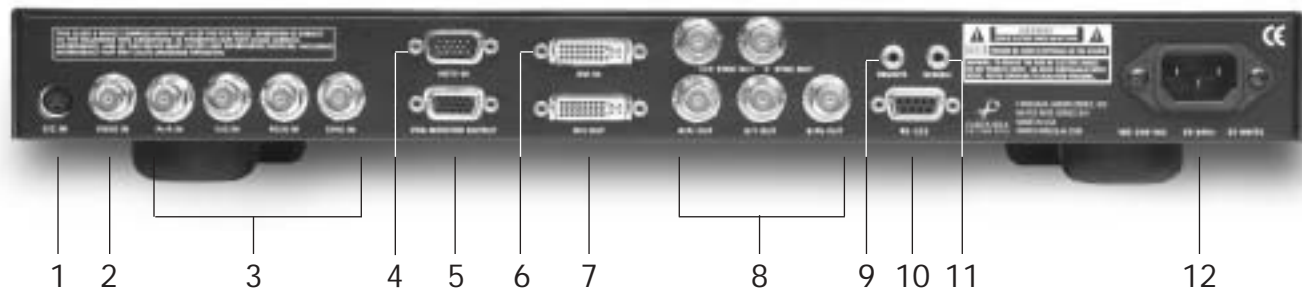
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4,967,271, 4,982,280, 4,989,090, 5,014,119, 5,025,312, 5,159,451, 5,237,414.

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INSTALLATION



INSTALLATION

Unpacking

Remove the NRS-DVI unit from the shipping container and examine it for any signs of shipping damage or missing items (check inventory list below). All shipping materials should be saved if the unit is to be moved or returned for service. Shipping unit back to Faroudja for service not in the original box may result in voiding warranty.

Placement

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

Ventilation

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

Connections

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

Inventory

1-NRS-DVI Unit	1- Remote + Batteries
1-Owner's Manual	1- Warranty Card
1- Power Cord	

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

1. S-Video input (4-pin DIN) for sources such as DVDs, Satellite systems, S-VHS tape decks (when using S-VHS tapes only), Hi-8 tape decks.
2. Composite video input (BNC) for sources such as Laserdisc players, cable TV, VHS tape decks, 8mm tape decks.
3. Interlaced or Progressive Component (YPrPb) or RGBs video input (BNC) for sources such as DVDs or high resolution YPrPb sources from HDTV satellites. Input auto-detects input type: 480i or 480p sources are sent to the internal processor, higher scan rate progressive sources such as from HDTV tuners or computers are routed to the Pass-Through. If transcode is selected in the Setup menu, the YPrPb HDTV signal will be transcoded to RGB.

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

4. High scan rate input (D15M) for sources such as HDTV signals or computers are passed through to the projector. The signal is sent to the outputs in the same format as the input unless Transcoding is selected. YPrPb from HDTV sources can be transcoded to RGBHV, as well. Use a BNC to D15 breakout cable if necessary. The Green, Red, Blue BNCs are used for YPrPb.

5. D15F connector output for use with computer monitors or to a second display device. Use only short cable runs. This output can be used at the same time as the BNC outputs
6. BNC connectors for main output with RGBHV or YPrPb signals to display devices. Cable runs up to 100ft are okay if good quality cables are used. For YPrPb outputs use:
 Red = Pr
 Green = Y
 Blue = Pb
 RGBHV is recommended.

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

7. 12V trigger to activate automatic screen relays. Voltage is constant when unit power is on. (12V, 3.5mm, 2 pin, Tip=+)
8. IR receiver connection allows for use with external IR receivers so unit can be installed behind walls. (5V-12V, 3.5mm, Tip=+)
9. RS232 D9F connection for use with RS232 control systems
10. AC Power connection.
11. DVI Input . DVI input is for pass-through to the DVI output only. DVI to RGB output is not available
12. DVI Output: Digital interface for compatible displays. All analog and digital inputs are output through this connection. Maximum cable length is 50ft. For longer lengths a distribution system or fiber optic system must be used.

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

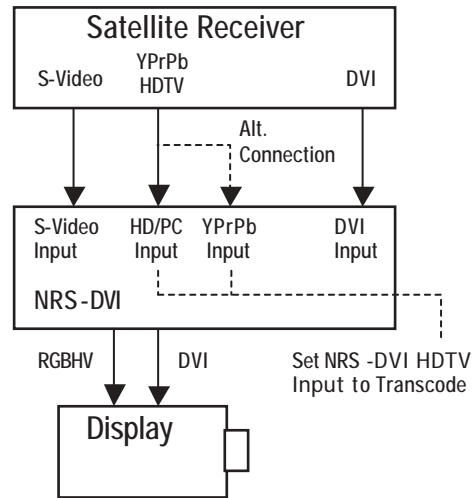
Connecting HDTV Satellite Receivers

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

1. Non HDTV material is output from the receiver via an S-video connection
2. HDTV material is output via YPrPb outputs

3. If available, HDTV material is also output via a DVI connector.

The following diagram offers one way to connect the system.



With this hookup viewing the different sources is as follows:

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

Note: The NRS-DVI pass-through input will "pass " the input signal to the output stage in the same format as the input signal, i.e. analog HDTV in – analog HDTV out, DVI HDTV in – DVI HDTV out. The HDTV signal cannot be converted from analog to digital or digital to analog. Also, HDTV signals with HDCP encryption will not pass through the NRS-DVI. Simply switch to the analog YPrPb output of the satellite receiver and switch the NRS-DVI output to analog RGBHV to view the signal.

As an alternative input, the NRS-DVI will auto-detect the HDTV signal (1080i & 720p) on the YPrPb inputs (BNC) and switch the signal to the pass-through output. Any 480p or 480i signal will be sent to the processing stage to be scaled to the output resolution.

SETUP



FRONT PANEL CONTROL

1. Firmware Reset: push a small paper clip into this opening to reset the unit's CPU.

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

2. Power/Standby: Press to turn the unit On (LED turns Green) or to Standby (Red).
3. Infrared Receiver Window
4. LCD Readout: Provides information on control of the processor. Displays current Function being used, matching the On-Screen-Display. When in the Setup Menu, the OSD is not available, use the LCD display.

SYSTEM FIRMWARE SETUP

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

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

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



To enter the Setup menu, press and hold the Menu button on the remote for five seconds.

Setup Functions can only be viewed on the front panel LCD, not from the OSD.

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

SETUP MENU FUNCTIONS

Set: Active Output

Analog/Digital (Default)

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

Output Format (Analog)

RGB (Default) / YPrPb

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

Composite Sync on H

On/Off (Default)

Note: this function is not active when YPrPb output is selected

Sync on Green

On/Off (Default)

Note: this function is not active when DVI output is selected. It is automatically set to On when YPrPb output is selected.

Horizontal Sync Polarity

Negative (Default) / Positive

Changes sync polarity, which may be needed for compatibility with some displays.

Vertical Sync Polarity

Negative (Default) / Positive

Changes sync polarity, which may be needed for compatibility with some displays

Set: Screen Shape

Wide Screen / 4:3 / Wide 4:3

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

- **Wide Screen**-Choose this when the screen is Widescreen and the projector will provide the anamorphic vertical squeeze.

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

- **4:3** – Choose this when the projector is 4:3 and the screen is 4:3

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

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

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

Set: RGB Input Sync

Sync-on-Green (Default) /TTL/Video

OSD (On Screen Display)

On (Default) /Off

OSD Timer

0-255 (30 default)

LCD Timer

6-255 (40 Default)

Note: setting the timer to 5 or lower sets the LCD backlight to Always On.

Set: RS232 Echo

On (Default) /Off

Allows RSR232 characters to be sent back to the controller.

Set: Component Input Standard

DVD (Default) /Professional (Betacam)

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

Note: Each input on the NRS-DVI can be activated or deactivated to simplify operation so unused inputs are not accessed when cycling through the inputs with the remote control.

Set: Video Input

Enabled (Default) /Disabled

Set: S-Video Input

Enabled (Default) /Disabled

Set: RGB Input

Enabled (Default) /Disabled

Set: YCrCb Input

Enabled (Default) /Disabled

Set: Passthru Input

Enabled (Default) /Disabled

Note: The YPrPb inputs auto-detect signal type. All 480i/480p signals are sent to the upconverter. HDTV signals are detected and routed to the pass-thru. Disabling the Pass-Thru input does not affect the YPrPb auto-detect feature.

Set: Passthru Transcode

Disable (Default) /Enable

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

Set: Restore Factory

Are You Sure? - Press Enter Key



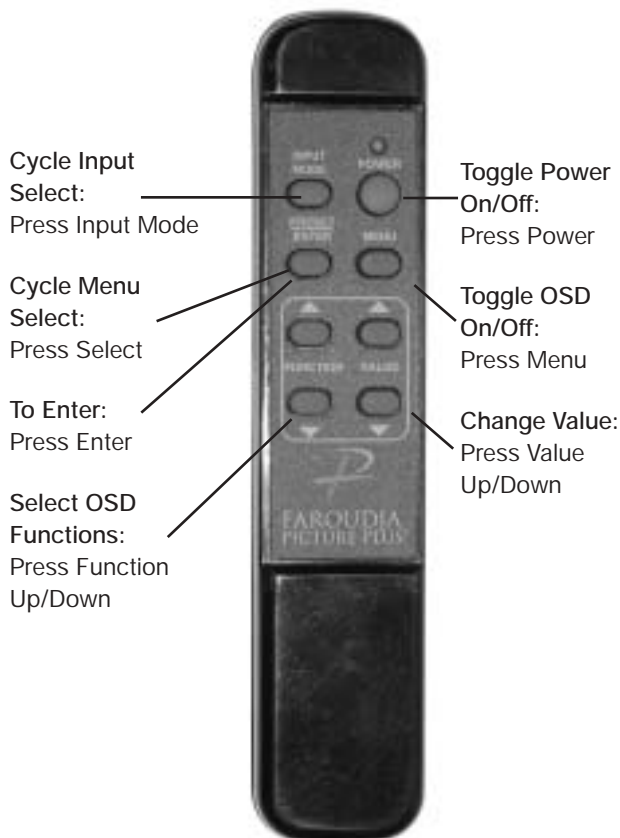
Use this Function only in the event that the processor no longer functions properly and all other system checks have been performed. This command will erase all custom settings and restore the original firmware configuration. Be sure to go back through the Setup procedure for proper operation.

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

IR REMOTE AND OSD OPERATION

The NRS-DVI is shipped with an eight button remote for controlling all Functions available in the unit.

The remote control allows for easy operation by simple navigation through the On Screen Display (OSD) menus. Repeated Pressing of a button toggles through the available choices.



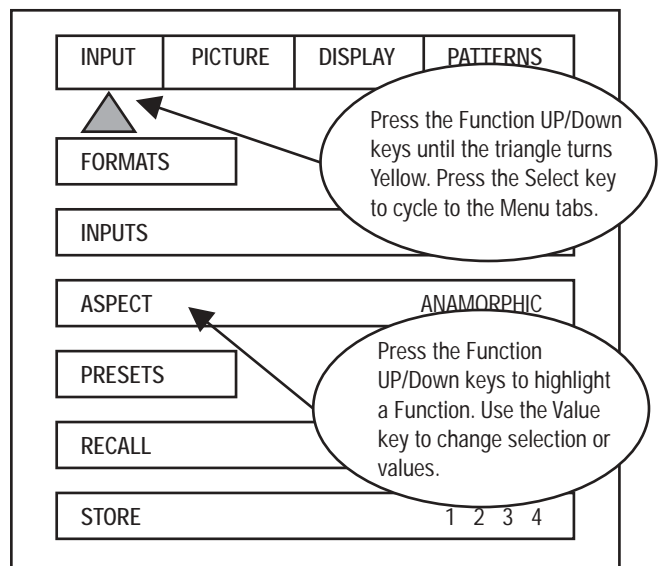
ON SCREEN DISPLAY (OSD)

Accessing the OSD

- Press Menu button to bring up main Index.
- Use Function Keys until the triangle at the top of the OSD turns yellow.
- Press the Select Key to toggle to the next menu page. A list of available Functions will appear.
- Press Function Up/Down keys to select an adjustment.
- Use Value Up/Down keys to adjust. The main menu drops away and a single line menu appears.
- Use the Function keys return to the drop down menu.
- Press Menu again to cancel OSD

Note: If a single Function menu is visible when the Menu button is pressed, the single Function line last use will appear when the Menu button is pressed again. Press the Function Up/Down key to return to the full OSD menu.

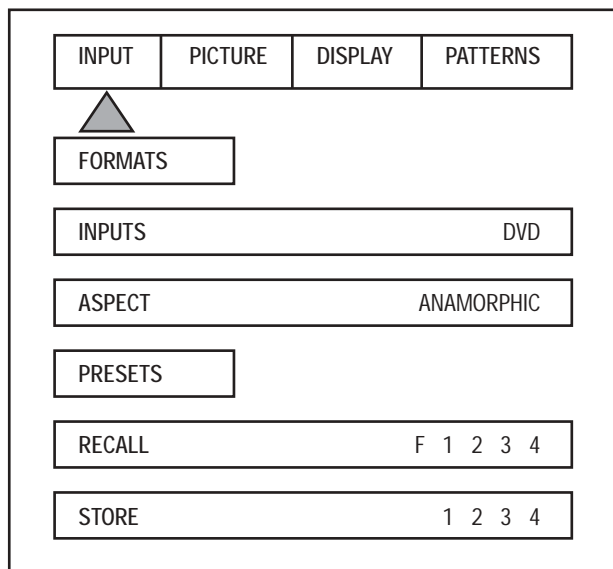
Note: Unused inputs can be deactivated for simpler operation of the processor. See the Setup instructions for details.



The OSD consists of four menu tabs:

Input – Picture – Display – Patterns

Input Menu



Formats

Input Select: OSD
Video-S-Video- RGB-YCrCb

Note: The Pass-Thru input cannot be selected from the OSD since an OSD is not available on that input. Use the Input button on the remote to select it.

Input Select: Input Button

Video-S-Video- RGB-YCrCb-
PassThrough-PassThruTranscoded

Aspect Ratio*

4:3-Letterbox-Anamorphic

Note: This selection should match the aspect ratio of the source, not the display. The aspect ratio of the display should be selected in the Setup menu.

Presets-

Recall: Factory-1-2-3-4
Store: 1-2-3-4

To store a preset (in the Input Menu):

- Press Menu button on the remote
- Make all required adjustments.
- Use the Function keys to select Store 1 2 3 4.
- Use the Value keys to select the desired preset number.
- Press Enter

To recall a Preset (in the Input menu):

- Press Menu button on the remote
- Use the Function key to select Recall
- Use the Value key to select a preset
- Press Enter

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

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

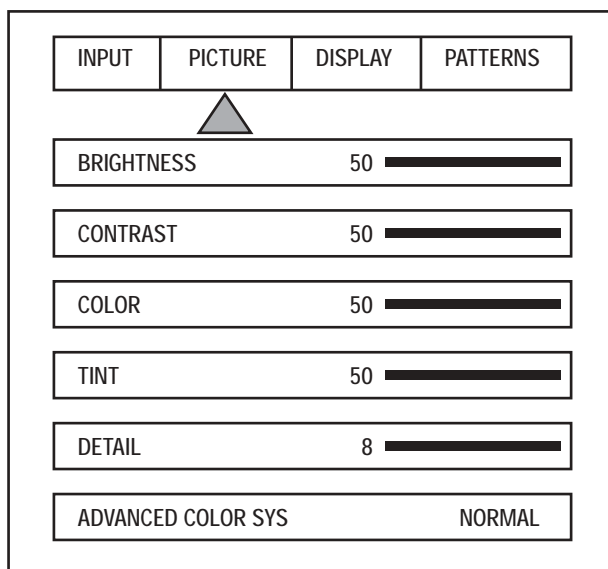
Note: The screen shape used in the installation must be set in the Setup Menu during installation for proper Aspect Ratio mapping. Anamorphic Aspect Ratio with 4:3 screens and the Wide-4:3 settings are not available on units with scan rates 480p, 540p, 600p and Frame Doubling. See Setup section for details.



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

Picture Menu

Use these commands to fine-tune the image.



Brightness
Factory 50

OSD / OPERATING INSTRUCTIONS

Contrast

Factory 50

Note: It is best to set Brightness and Contrast levels using the controls of the display with the proper test pattern and with the NRS-DVI in the Factory default setting for the initial setup. This means with day-to-day use, when the Factory preset button is pressed, the system is back to the original optimum settings, while changes made for specific sources can be saved in the custom Presets.

Color

Factory 50

This adjusts the amount of color. The Faroudja processor is calibrated to meet broadcast (SMPTE) color specifications so only minor color adjustments should be needed.

Tint

Factory 50

Tint is not available with YPrPb sources

Detail

Factory 8

Note: The Detail circuit is a powerful tool for image quality. The settings have been optimized for the output scan rate and resolution. However, the viewer's tastes plus the types of software and display require making adjustments of this setting to fine-tune the image. This control is very effective to increase detail in poor quality video material. It is recommended that adjustments be made in small increments until the desired results are achieved and then store these custom settings in the Presets. It is important to not use too much Detail as the image will start to look artificial.

Typically, digital displays will need less detail than analog displays. High quality software will need less detail than poor quality ones. Reducing the Detail level can help to reduce the visibility of MPEG artifacts on some DVDs and satellite systems and noise with VHS tapes. The best results are achieved by adjusting the levels to the software being viewed instead of just using test patterns.

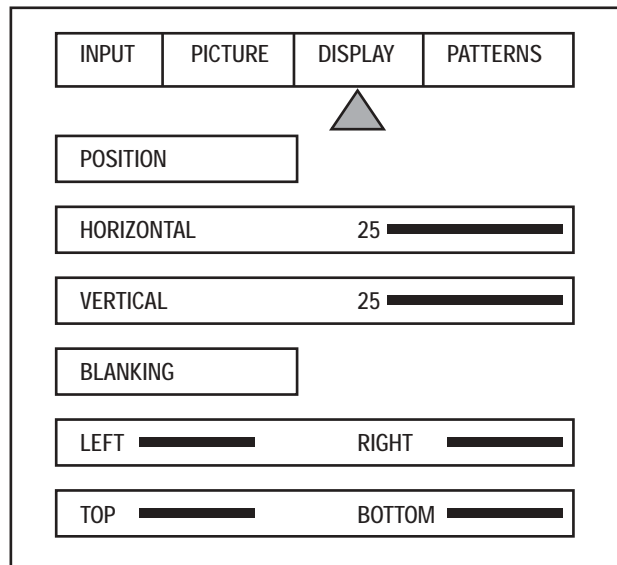
Advanced Color System

Normal (default) /Bypass

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

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

Display Menu



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

Horizontal Position

25 default

Moves image left or right of center.

Vertical Position

25 default

Moves image up or down from center.

Note: Moving the image too far to the left or right can cause the display to stop working. Move image to center to correct. Use the positioning controls in the display first– if available. Also, many display devices require a specific setting when using high scan rate sources such as the NRS-DVI or HDTV. Be sure to completely read the installation manual for the display device before making adjustments.

Bottom Blanking

This adjusts the bottom edge blanking

Right Blanking

Adjusts the right edge blanking

Left Blanking

Adjusts the left edge blanking

Top Blanking

Adjusts the top edge blanking

Blanking Level

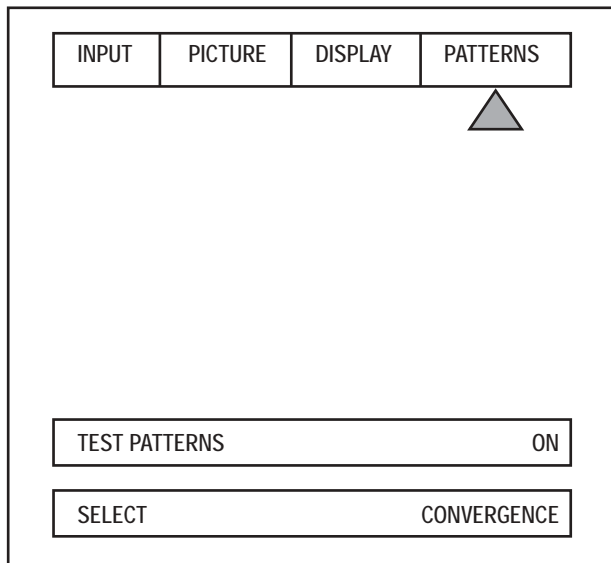
This adjusts the blanking from black to white. This can be used to create a gray side bar for use with 4:3 aspect ratio sources on wideangle screens to help reduce the chance of image burn-in. Image burn in is not covered by Faroudja's warrantee.

Note: The NRS-DVI will store unique blanking and H&V position settings for each aspect ratio which are automatically stored and recalled when the different aspect ratios are selected

Patterns Menu

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

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



AVAILABLE PATTERNS:

10-step Gray Scale: Check gray scale

Cb Ramp: Check linearity of Cb channel

Cr Ramp: Check linearity of Cr channel

Black: Full Black screen

Green Screen : Check for defective pixels

Red Screen: Check for defective pixels

Blue Screen: Check for defective pixels

Convergence: Check convergence of display

Active Borders: Use for H&V positioning

SMPTE Color Bars: Set color/brightness/contrast

100IRE Window: Check displays power supply

PLUGE: Set Brightness and Contrast

100IRE CB: Color bars for decoder check

100IRE Rev. CB: Color bars for decoder check

RS232 INSTRUCTIONS

Connector: DB-9 Female

Baud rate: 19,200 default, 8 bit,
1 stop bit and No Parity

Pin Configuration:

- Pin 5 = Ground
- Pin 3 = Rx
- Pin 2 = Tx

All commands are sent using ASCII text strings.

Note: A command must start with the string header "NRS"

RS232 CODES

Following the header, a comma is used to delimit the header from the command. All the commands with their descriptions are listed below. All the text strings

are terminated with a carriage return (0x13). Maximum command string length is 250 characters. The header and command are not case sensitive.

OPERATION COMMANDS		(Used for day-to-day operation)
COMMAND	OPTIONS OR RANGE	DESCRIPTION
A#	(0-2) 0=4x3,1=Letterbox, 2=Anamorphic	Input Aspect Ratio – for all sources
B#	(0-170) 128 default	Brightness
C#	(0-155) 110 default	Contrast
D#	(0-13) 8 default	Detail
EXT		Pass-through Input
FST		Report Current System Status
HELP		Display this Help Menu
K#	(0-220) 128 default	Color
L#	(1-4)	Store User Preset
OFF		Power OFF
ON		Power ON
P#	(0-4) [1-4=User, 0=Factory]	Recall Preset
PATT		Display Test Pattern Help
PM#	(0-1) [0=Normal1=Bypass]	Advanced Color System
PR		Pass-through input
ST		Report Current Status
T#	(0-255) 128 default	Tint
TP#	0=Off 1=100% Color Bars 2=Reverse Color Bars 3=10-step Grayscale 4=Luma Ramp 5=Cb Ramp 6=Cr Ramp 7=Green 8=Red 9=Blue 10=Convergence 11=Active Boarder 12=SMPTE Color Bars 13=100% Window 14=PLUGE Test Pattern Selection	
V		Video input
X		YCrCb input
Y		S-Video input
SETUP COMMANDS		(Normally not controlled by RS232)
COMMAND	OPTIONS OR RANGE	DESCRIPTION
BB#	(0-192)	Bottom Blanking
BL#	(0-252)	Border Level – black to white
BLT#	(0-255)	LCD Backlite Timer on front panel
CS#	1=On 0=OFF	Composite Sync – for RGB output
E#	1=On 0=OFF	RS-232 ECHO
EXTD		PassThru Input Disabled
EXTE		PassThru Input Enabled

RS232 CODES

G#	(0-2) [0=OFF 1=Bi-Level 2=Tri-Level]	SYNC on G/Y
HP#	(0-50) 25 default	Horizontal Position
HPOL	0=Neg 1=Pos	Horizontal Sync Polarity
LB#	(0-200)	Left Blanking
M#	(0-2) [0=RGB, 1=YCrCb, 2=YPrPb]	Output Mode
OSDOFF		OSD Off – for processor
OSDON		OSD On -for processor
OUTMOD	0=Analog, 1=Digital	Output Mode
PY		PassThru Transcoded Input
PY		YCrCb to RGB – activates transcoding for pass-through inputs
PYD		PassThru Transcode Disable
PYE		Pass-Thru Transcoder Enabled
R		RGB input
RB#	000-192	Right Blanking
RD		RGB Input Disabled
RE		RGB Input Enabled
TB#	000-192	Top Blanking
VD		Video Input Disabled
VE		Video Input Enabled
VP#	(0-50) 25 default	Vertical Position
VPOL#	(0=Neg 1=Pos)	Vsync Polarity
XD		YCrCb Input Disabled
XE		YCrCb Input Enabled
YD		S-Video Input Disabled
YE		S-Video Input Enabled
ADVANCED ENHANCER CONTROLS		USE ONLY BY QUALIFIED TECHNICIAN!
COMMAND	OPTIONS OR RANGE	DESCRIPTION
CHLEG		CHLE Gain
CHLET		CHLEE Threshold
HDPG		HDP Gain
HDPT		HDP Threshold
HLEG		HLE Gain
HLET		HLE Threshold
VDPG		VDP Gain
VDPT		VDP Threshold

Note: The default settings for the Enhancer can be different for each scan rate.

Enter NRS-DVI, FST in a terminal driver program to get the default numbers or contact Faroudja.

INFRARED COMMAND LIST

Direct access Infrared commands are available.
Contact Faroudja technical support for details.

IR Command List		
Power On/Off (toggle)	0	4:3 (aspect ratio)
	1	Letterbox (aspect ratio)
Input	2	Anamorphic (aspect ratio)
Aspect Ratio	3	Power On
Brightness	4	Power Off
Contrast	5	Preset 1
Color	6	Preset 2
Tint	7	Preset 3
Detail	8	Preset 4
Noise Reduction	9	Factory
Function Up / (Up Direction)	DVD (input)	Return DCS
Function Down / (Down Direction)	Video (input)	
Value up / (Right Direction)	S-video (input)	
Value Down / (Left Direction)	YCrCb (input)	
Preset / Enter	RGB (input)	
Menu	Pass-Thru (input)	

SPECIFICATIONS

Inputs (Interlaced)	
Format NTSC Only	
Composite(BNC)	1vpp
S-Video (4-pin DIN)	1vpp C -286mvpp
Component (BNC) Auto-detect: 480i/480p sent to upconverter, 1080i or 720p sent to pass-through.	Y -1vpp(SMPTE) Cr -700mvpp Cb -700mvpp
RGB (BNC) Interlaced	Comp. Sync -1vpp RGB -700mvpp
HD/PC Pass-Thru	D15M
DVI Input (for pass-through only to DVI out)	DVI-I (female) Digital Only
Remote Control "D9F"	RS-232 ASCII
Remote IR sensor input	5V-12V, 3.5mm, Tip=+
Outputs (Progressive)	
R,G,B (BNC or DB15)	700mvpp, TTL Sync
YPrPb	700mvpp, Sync on Y -1vpp
RGsB RGB -700mvpp	Gs -1vpp
D15F	Pin Function
1	Red Out
2	Green Out
3	Blue Out
7	Red Gnd
8	Green Gnd
9	Blue Gnd
10	Sync Gnd
11	Sync Gnd
13	H Sync Out
14	V Sync Out
Digital Video Interface	DVI-I (Female) digital only
Horizontal Sync:	NTSC: 31.5KHz - 63KHz -depending on model
Screen	Trigger 12V, 3.5mm, 2 pin, Tip=+
Vertical Sync:	60Hz/50Hz, 4.0 vpp TTL
Composite Sync :	4.0 vpp TTL
Dimensions (Depth includes rear BNC)	1.75" H x 17" W x 11.75" D
Weight	14 lbs,
Power Consumption	30.5wts/115VAC/60Hz,
Power Supply	100-240VAC 50/60Hz Auto Ranging

LIMITED WARRANTY

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