

Operation Manual



Pathfinder HR Series High Resolution RGB Matrix Switchers





Installation and Safety Instructions

For Models without a Power Switch:

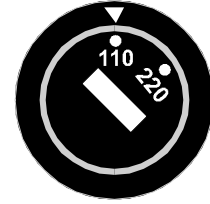
The socket outlet shall be installed near the equipment and shall be accessible.

For Models with 110 / 220V Power Selector:

Caution: Before applying power to this unit, the voltage selector must be set to the appropriate setting to match local A/C line voltage. Improper setting of the voltage selector may cause damage to the unit and create a potential fire hazard.

The voltage selector is a round switch located next to the A/C power input connector which looks like this:

Using a straight slot screwdriver or small coin, rotate the selector to the correct position so that the arrow lines up with 110 or 220 as appropriate for local power line voltage as indicated in the chart below:



Local A/C Voltage	Voltage Selector Setting
110 ~ 120 VAC	110
220 ~ 240 VAC	220

For all Models:

No serviceable parts inside the unit. Refer service to a qualified technician.

For Models with Internal or External Fuses:

For continued protection against fire hazard, replace only with same type and rating of fuse.

For IN2001 / IN3234 / IN3236 / IN3502 / IN3504 / IN3506 / IN3562 / IN3564 / IN3566 / IN3572 / IN3574 / IN3576:

Caution: Double pole / neutral fusing.

For all Models with Integral Lithium Battery:

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.



Instructions d'installation et de sécurité

Pour les modèles sans interrupteur de courant:

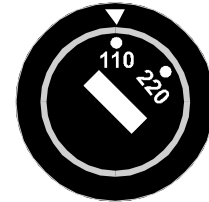
La prise de courant d'alimentation sera installé près de l'équipement et sera accessible.

Pour les modèles avec un sélecteur d'alimentation 110V/220V:

Attention: Avant de connecter l'appareil au circuit d'alimentation, le sélecteur de courant doit être positionné sur la sélection appropriée correspondant au voltage du circuit de courant alternatif local. Une mauvaise sélection peut engendrer des dommages à l'appareil et créer un danger d'incendie.

Le sélecteur d'alimentation est un commutateur rond positionné près du connecteur d'alimentation. Il se représente comme suit:

A l'aide d'un tourne-vis plat ou d'une pièce de monnaie, le sélecteur peut être tourné dans la position adéquate en veillant que la flèche corresponde avec 110 ou 220, en fonction de la valeur du circuit de courant local. (Voir tableau ci-dessous)



Circuit local AC	Position Sélecteur
110 ~ 120 VAC	110
220 ~ 240 VAC	220

Pour tout les modèles:

Pas de composants à entretenir à l'intérieur. Confiez toute réparation à un technicien qualifié.

Pour les modèles équipés de fusibles internes ou externes:

Afin d'éviter tout danger d'incendie, ne remplacer qu'avec le même type et la même valeur de fusible.

Pour IN2001 / IN3234 / IN3236 / IN3502 / IN3504 / IN3506 / IN3562 / IN3564 / IN3566 / IN3572 / IN3574 / IN3576:

Attention: Double pôle / fusible au neutre.

Pour tout les modèles avec une batterie au lithium interne:

Attention: Danger d'explosion si la batterie est incorrectement remplacée. Ne remplacez la batterie qu'avec le même modèle, ou avec un modèle recommandé par le constructeur. Traitez les batteries usagées selon les instructions du fabricant, ou selon les normes écologiques en vigueur.



Installations und Sicherheitshinweise

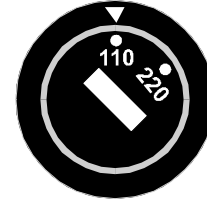
Für Geräte ohne Netzschalter:

Die Netzsteckdose soll in der Nähe des Gerätes installiert und frei zugänglich sein.

Für Geräte mit 110 / 220V Spannungswähler:

Achtung: Bevor Sie dem Gerät Spannung zuführen, muß der Spannungswähler entsprechend der Spannung des lokalen Wechselspannungsnetzes eingestellt werden. Die falsche Stellung des Spannungswählers kann eine Beschädigung des Gerätes und möglicherweise ein Feuer verursachen.

Der Spannungswähler ist ein runder Schalter in der Nähe der Netzeingangsbuchse mit folgendem Aussehen:



Drehen Sie den Wähler mit einem normalen Schraubenzieher oder einer kleinen Münze so, daß der Pfeil auf die 110 oder 220 zeigt, entsprechend der Spannung Ihres lokalen Netzes wie hier angezeigt:

Lokale Netzwechselspannung	Stellung des Spannungswählers
110 ~ 120 V	110
220 ~ 240 V	220

Für alle Geräte:

Keine Wartung innerhalb des Gerätes notwendig. Reparaturen nur durch einen Fachmann!

Für Geräte mit interner oder externer Sicherung:

Für dauernden Schutz gegen Feuergefahr darf die Sicherung nur gegen eine andere gleichen Typs und gleicher Nennleistung ausgewechselt werden.

Für IN2001 / IN3234 / IN3236 / IN3502 / IN3504 / IN3506 / IN3562 / IN3564 / IN3566 / IN3572 / IN3574 / IN3576:

Achtung: Allpolige Absicherung

Für alle Geräte mit eingebauter Lithium Batterie:

Achtung: Explosionsgefahr bei falschem Batterieeinsatz. Batterie nur ersetzen durch den gleichen oder entsprechenden Typ wie vom Hersteller empfohlen. Entsorgung verbrauchter Batterien nur nach den Anweisungen des Herstellers.



Instalacion E Instrucciones de Seguridad

Modelos Sin Interruptor:

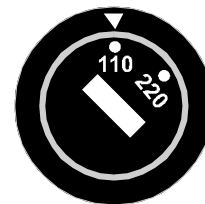
La conexión debe ser instalada cerca del equipo y debe ser accesible.

Modelos con Selector de Voltaje de 110/220V:

Precaución: Antes de operar esta unidad, el selector de voltaje debe instalarse de forma que corresponda a la línea de voltaje local. Instalación inadecuada del selector de voltaje puede causar daño a la unidad y originar un incendio.

El selector de voltaje es un cambio vía redondo localizado cerca de la conexión eléctrica, como se ve en el dibujo:

Use un destornillador común o una moneda pequeña, mueva el selector a la posición correcta, de forma que las flechas indiquen 110 o 220 de acuerdo con el voltaje local, como está indicado a continuación.



Voltaje Local A/C	Selector de Voltaje
110 ~ 120 VAC	110
220 ~ 240 VAC	220

Para Todos Los Modelos:

Dentro de la unidad, no hay partes para reparar. Llame un técnico calificado.

Modelos con Fusibles Internos o Externos:

Para prevenir un incendio, reemplace solo con el mismo tipo de fusible.

Modelos IN2001 / IN3234 / IN3236 / IN3502 / IN3504 / IN3506 / IN3562 / IN3564 / IN3566 / IN3572 / IN3574 / IN3576:

Precaución: Double Polo / Fusible Neutral.

Modelos con Batería de Lithium Interna:

Precaución: Peligro de explosión si la batería es reemplazada incorrectamente. Reemplace solamente con la misma clase de batería, o una equivalente recomendada por el fabricante. Deseche las baterías usadas de acuerdo con las instrucciones del fabricante.

CE COMPLIANCE

All products exported to Europe by Inline, Inc. after January 1, 1997 have been tested and found to comply with EU Council Directive 89/336/EEC. These devices conform to the following standards:

EN50081-1 (1991), EN55022 (1987)

EN50082-1 (1992 and 1994), EN60950-92

Shielded interconnect cables must be employed with this equipment to ensure compliance with the pertinent Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) standards governing this device.

**FCC COMPLIANCE**

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide against harmful interference when 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 instruction manual, may cause harmful interference to radio communications. Operation of equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their own expense.

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PRODUCT OVERVIEW

DESCRIPTION

The PATHFINDER HR is a 200 MHz high resolution matrix switcher designed to route multiple RGB and audio signals to multiple output devices. PATHFINDER HR series switchers are commonly installed in board rooms, training centers, monitoring facilities, simulation systems and any other installation requiring comprehensive routing control over multiple video and audio sources. PATHFINDER HR switchers are also integrated into rental and staging A/V systems for live presentations and shows, especially productions which require real time control over a variety of video and audio sources and display devices with split second timing and fool-proof operation.

PATHFINDER HR VARIETIES

The PATHFINDER HR series includes several different models, all of which are housed in a rack mountable case measuring 3U in height. The front panel is identical on all models while the rear panel layout, switching boards and model designations vary according to the following parameters:

Basic Type of Matrix

Fixed Matrix - Factory set number of inputs and outputs

Reconfigurable Matrix - User adjustable number of input and outputs

Number of RGB Video and Sync Boards

3 Video Boards Only -

3 Video Boards / 1 Sync Board -

3 Video Boards / 2 Sync Boards -

Compatible Signal Formats*

RGsB / RsGsBs

RGsB / RsGsBs / RGBS

RGsB / RsGsBs / RGBS / RGBHV

*All models are also compatible with Composite, Y/C, and Component Video

Inclusion and Type of Stereo Audio Board:

No audio board

Stereo Audio with Phoenix Brand captive screw terminals

Stereo Audio with Dual RCA female connectors

SAMPLE MODEL NUMBERS

IN60808HR	3 Video Boards Only,	8 Inputs & 8 Outputs
IN61204HRS	3 Video Boards, 1 Sync Board	12 Inputs & 4 Outputs
IN61204HRV	3 Video Boards, 2 Sync Boards	12 Inputs & 4 Outputs
IN60804HRSA	3 Video Boards, 1 Sync Board, Stereo Audio with RCA connectors	8 Inputs & 4 Outputs
IN60804HRVP	3 Video Boards, 2 Sync Boards, Stereo Audio with Phoenix connectors	8 Inputs & 4 Outputs
IN60016HRVP	3 Video Boards, 2 Sync Boards, Stereo Audio with Phoenix connectors	16 Port Reconfigurable

PRODUCT FEATURES

- **200 MHz Bandwidth** - ensures flawless switching and distribution of ultra high resolution signals without signal degradation. The 200 MHz rating is a worst case specification and is met even when one input signal drives several outputs or all outputs. In cases where one input drives one output, bandwidth will generally exceed 200 MHz.
- **Front Panel Control** - A keypad and back lit LCD display allow technicians and users to configure the PATHFINDER HR switcher and execute switches.
- **Serial Port** - All setup and switching operations may also be accessed remotely using the RS-232 serial port which accepts ASCII format commands from a computer serial port or third-party control system.
- **RGB Delay** - If desired, RGB delay may be engaged. Each time a switch is made, the sync signal will be connected to the output instantly, followed later by the RGB signals. The time delay between the RGB and sync components is adjustable from 0.0 to 6.0 seconds in .5 second intervals.
- **Board Groups** - The switcher may be set to switch all video and audio boards simultaneously, or it may be set to act as 2, 3, 4, 5 or 6 independent switchers. A board group is used to define which of the RGB video, sync, and audio boards will be grouped together for purposes of switching control. The most common board group configuration has all boards grouped together as Group 1 so that RGB, Sync and stereo audio components switch together.
- **Memories** - Ten configuration memories are available. These memories store commonly used switching configurations, including board group information and input/output patches. Once stored, any of the ten memory settings may be recalled using front panel controls or a serial command. When a memory is recalled all the new input/output patches are executed simultaneously (a salvo).
- **Recall Mode** - offers a simplified mode of operation, especially designed for situations where the PATHFINDER will be controlled from the front panel for a presentation or show. Using the Recall Mode, pre-stored memories may be recalled and executed by touching a single button (0 - 9). Once placed into the Recall Mode all front panel controls except for the 0 - 9 buttons are disabled. Since all advanced settings such as RS-232 communication settings, board groups, or memories are locked away and may no longer be changed from the front panel, Recall mode is ideal for use by non-technical users or any other time it would be desirable to provide a simplified, fool-proof mode of switching operation.

FIXED VS. RECONFIGURABLE

PATHFINDER HR matrices are manufactured in two basic varieties: Fixed and Reconfigurable. Before installing or operating a PATHFINDER HR series switcher, it is important to understand the differences between fixed and reconfigurable matrices.

Fixed matrix models have a factory set number of available inputs and outputs. Some users might also call this type of matrix switcher a “conventional matrix,” but due to their unique design, no PATHFINDER HR series switcher could ever be considered conventional. Current fixed matrix models include the following sizes:

8 x 4	8 input ports and 4 output ports
8 x 8	8 input ports and 8 output ports
12 x 4	12 input ports and 4 output ports

Fixed only refers to the fact that the total number of inputs and the total number of outputs is determined at the time the matrix is manufactured. It does not imply any limitation in signal routing capabilities. Just as with the reconfigurable models, a fixed model is capable of routing any given input to any output or multiple outputs simultaneously and the assignment of inputs to outputs is completely flexible and changeable at any time from either the front panel controls or via the serial port.

Reconfigurable Matrix Models feature very flexible input and output configuration, which may be changed as needed using the front panel or serial control. Reconfigurable PATHFINDERs achieve unprecedented flexibility by using dual function ports (I/O) which may be set to operate as either inputs *or* outputs as desired. Changing the number of available input and output ports does not require a physical change of hardware as on conventional matrix switchers, but is changeable instantly at any time using the front panel controls or through serial commands. Reconfigurable matrix models are ideal for applications where the proportion of inputs and outputs may change from day to day. Reconfigurable matrices offer the following types of ports and capabilities:

12 Port Reconfigurable

4 input ports

2 output ports

6 input/output ports (user definable)

Potential Matrices: 10x2, 9x3, 8x4, 7x5, 6x6, 5x7, 4x8

16 Port Reconfigurable

4 input ports

2 output ports

10 input/output ports (user definable)

Potential Matrices: 14x2, 13x3, 12x4, 11x5, 10x6, 9x7,
8x8, 7x9, 6x10, 5x11, 4x12

QUICK INSTALL

The section provides a quick overview to help you get the PATHFINDER HR series switcher up and running in a hurry. Each subject and procedure is covered in greater detail in the remainder of this manual including images of all LCD screen displays.

#1 Find the model number.

Look at the back of the unit to determine the model and input / output capabilities of your specific PATHFINDER. The model number sticker is located in the upper right hand corner, above the power switch. Locate this model number in the list on page xx to determine the input / output capabilities of your switcher.

#2 Set the Board Groups and Number of Active Inputs / Outputs.

Models leave the factory with the following default settings for number of active ports and board groups. If these settings match your requirements you may skip #2 and proceed directly to #3.

Factory Default Settings			
Model	Active Inputs	Active Outputs	Board Groups
Fixed Models			
8 x 4	8	4	1 (all boards switch together)
8 x 8	8	8	1 (all boards switch together)
12 x 4	12	4	1 (all boards switch together)
Reconfigurable Models			
12 Port	4	2	1 (all boards switch together)
16 Port	4	2	1 (all boards switch together)
<i>With the reconfigurable models, all I/O ports are disabled until you assign them as either inputs or outputs.</i>			

A. Assign Board Groups:

- Turn on the power switch on the rear of the unit.
- After two introductory screens are displayed, press the MENU button to enter the Main Menu selections.
- Press the ▲ button once so that MAIN MENU / GROUP CONFIG is displayed.
- Press the ENTER button.
- After the warning screen ALL SETTINGS WILL BE ERASED press the ENTER button again.

The current board group configuration is now displayed

The top row of the display shows the location, number and type of switching boards, starting with board number 1 on the left. VVVSSA indicates that the

Pathfinder has 3 video boards, two sync boards, and one audio board (stereo audio signals are switched together on a single

switching board). The bottom row of the display shows what board group each of these boards is assigned to. In this example, boards 1-5 (VVVSS) are in group 1 and board 6 (audio) is in group 2.

-- To change the board grouping, enter a series of numbers on the keypad as desired. If you make a mistake you may continue to enter numbers on the keypad and the cursor will cycle back to the first board where you may start again. Please note that at least one board must be assigned to group 1.

Sample board grouping configurations:

Press 111112. The three video boards and two sync boards are all assigned to group 1, while the stereo audio board is assigned to group 2.

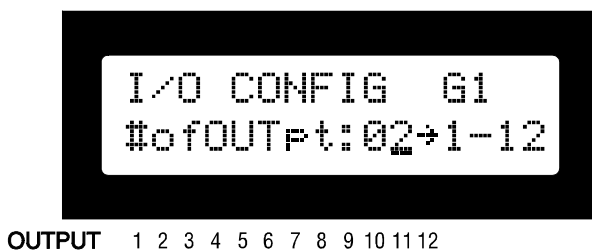
Press 111111. All six boards assigned to group 1 and will switch together (factory default).

Press 111110. The three video boards and two sync boards are all assigned to group 1, while the stereo audio board is assigned to group 0 and therefore disabled.

--To save your Board Group selection press ENTER.

B. Set I/O Configuration:

The screen now displays



G1 indicates you are setting the I/O configuration for group 1. The current setting is 2 active outputs out of a possible 12 outputs.

--Use the Keypad to enter a two digit number corresponding to the desired number of outputs.

Examples: 03 ENTER sets the unit for 3 outputs
 05 ENTER sets the unit for 5 outputs
 11 ENTER sets the unit for 11 outputs

The screen now displays



This indicates that currently four inputs are active out of a possible 12.

OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

--Use the Keypad to enter a two digit number corresponding to the desired number of outputs.

Examples: 04 ENTER sets the unit for 4 inputs
 07 ENTER sets the unit for 7 inputs
 12 ENTER sets the unit for 12 inputs

--If you have more than one board group then you must repeat step B for each group. Once the I/O configuration has been completed for all board groups the following screen will be displayed:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#3 Set the Remote Control Parameters.

If the Pathfinder will only be controlled from the front panel you may skip this step and go to #4.

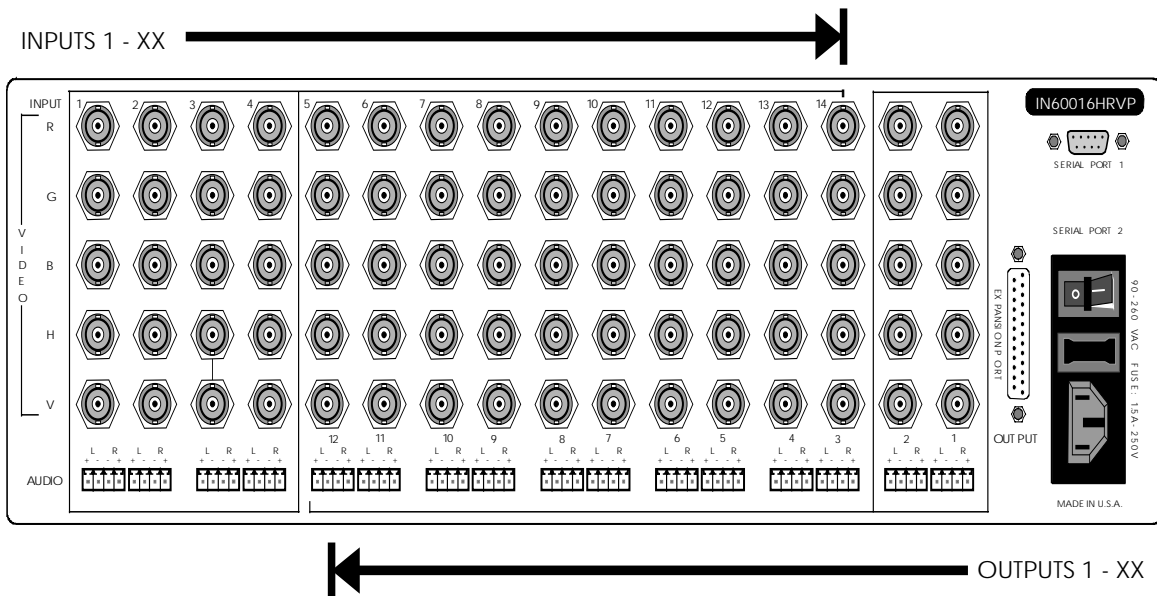
--Connect a serial control cable from your control system to SERIAL PORT 1, located on the back panel of the PATHFINDER. For pin out information, see page 21.

--The default serial protocol is 1200 baud, No parity, 8 bits, 1 stop bit. The default command code delimiters are []. For information on changing baud rate and command code delimiters see pages 19 & 20.

--RS-232 parameters, command code structure and a list of serial commands are found on page 19-22.

#4 Connect the input sources and output devices.

--Look at the back panel of the switcher as shown below. Inputs are numbered from 1 - 14, with input #1 located on the far left end of the panel. Outputs are numbered from 1 - 12 with output #1 on the far right end of the panel. The actual number of available input and output ports varies according to which fixed or reconfigurable model you have and also depends on how you set the I/O configuration in step #2.



- Connect all input devices to the input ports.
- Connect all output devices to the output ports.

High resolution coaxial cables such as the IN7000, IN7200, and IN7300 series are recommended for all system interconnections to ensure optimum performance.

#5 Set other parameters as required.

The PATHFINDER HR matrix switcher is now ready for use. You may also wish to adjust other parameters as addressed in the following sections:

- Controlling Switching Operations from the front panel - pages 9 -13
- Storing and Recalling Memories (salvos) - pages 13 & 14
- Recall Mode - page 15
- Setting RGB Delay - pages 16 & 17
- Resetting the PATHFINDER to factory default settings - page 17
- Remote Control Only mode - page 18
- Getting System (firmware) Information - page 18

SWITCHING OPERATIONS

The Pathfinder HR series matrix switcher is capable of routing any input to any output or multiple outputs. The unit's switching operations may be controlled from either the front panel or through the serial port. Front panel switching operations are accomplished using the Path Mapping Display as described below or by saving and recalling configuration memories.

PATH CONFIGURATION

While the Main Menu selections are primarily used for set-up operations (except for the Recall Mode), the Path Configuration (Path Config) display indicates the current input/output patches and also provides a way to create new patches.

The Path Config display is used to change a single input/output patch at a time. Users who need to execute several new patches simultaneously (a switching salvo) must store these salvos into memory and use the recall mode to execute them. Users who need to load and execute a series of new I/O patches on the fly should use the serial port for switching operations.

Entering Path Config

To enter this display mode, press the **MENU** button. Each time the **MENU** button is pressed the LCD display will toggle between the Main Menu selections (which all say MAIN MENU on the top line of the display) and the Path Mapping Display.

Press **MENU** to toggle between these two screens:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

Interpreting the Path Config Display Information



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

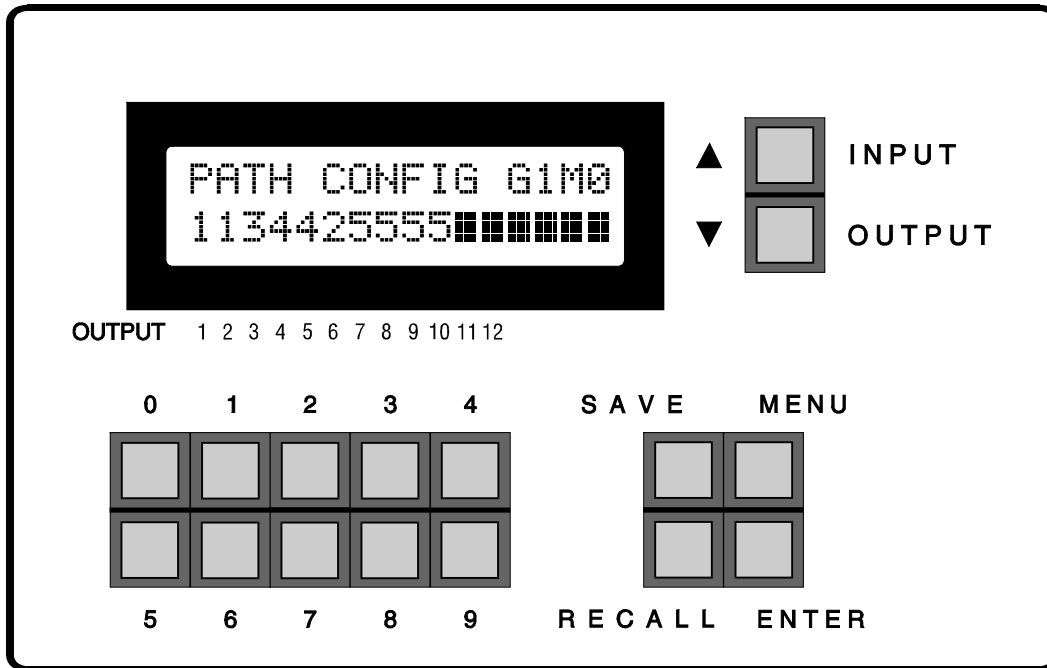
Input 1 → Output 1, Input 1 → Output 2, Input 3 → Output 3, Input 4 → Output 4,
Input 4 → Output 5, Input 2 → Output 6, Input 5 → Output 7, Input 5 → Output 8,
Input 5 → Output 9, Input 5 → Output 10

G1 - Indicates Group 1, the Switching group which is currently displayed.

M0 - Indicates the Configuration Memory Number.

113442555 - Indicates current Input / Output status for Group 1:

Changing Input / Output Patches

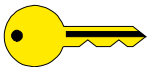


- #1 Press **MENU** to enter the Path Config display.
- #2 Press **OUTPUT** followed by two digits indicating the output you wish to change.
- #3 Press **INPUT** followed by two digits indicating the input you wish to route to the **OUTPUT** specified in #2.
- #4 Press **ENTER**. The switch is now executed and the display changes to show the new patch.

Examples:

Connect Input 3 to Output 5: Press **OUTPUT 05 INPUT 03 ENTER**
 Connect Input 2 to Output 9: Press **OUTPUT 09 INPUT 02 ENTER**
 Blank Output 10 (no signal): Press **OUTPUT 10 INPUT 00 ENTER**

KEY CONCEPT



When the Path Config display is used to change an input / output patch, that patch is only applied for the current switching group (in the display shown above this would be Group 1). If all boards are set to switch as one group then the new patch will apply to all boards (i.e. RGBHV & audio). However, if the Pathfinder HR has been configured with more than one board group, the new Input / Output patch will only apply to the currently selected switching group.

*In order to change the patches for other boards, another group must first be selected. To select a different board group, press and hold **MENU** while clicking the **▲** or **▼** keys (see *Selecting Board Groups* - page 13).*

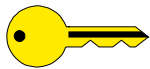
BOARD GROUPS

Pathfinder HR Design Topology

Each Pathfinder HR switcher is composed of 3 - 6 independant switching boards, with each board carrying a different video or audio signal component. All Pathfinder HR models include 3 video switching boards and may also include a 1 or 2 sync boards and a stereo switching board.

Since each board acts as an independant switcher, many custom configurations are possible. A single Pathfinder switcher could be used to switch three different composite video signals, or one composite video signal and one S-Video (Y/C) signal.

KEY CONCEPT



Pathfinder HR matrix switchers contain three types of boards, each optimized for a specific type of signal:

Video boards are designed primarily for video but may also carry sync.

Sync boards are only designed for composite sync, or horizontal / vertical sync signals. Sync boards are ***not*** designed to carry video components or composite video.

Audio boards are only designed to carry line level audio signals.

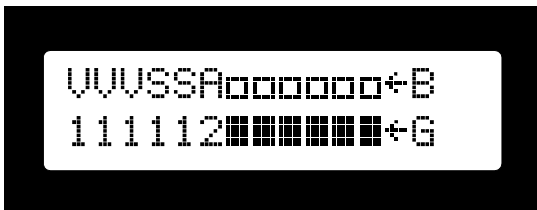
Board Groups - Common Configurations

Board groups are a tool used by the switcher to control the various switching boards in the Pathfinder. In many installations, all switching boards will be assigned by the installer as Group 1. This means that any time a front panel or serial switching command is entered all boards will switch together. While up to six board groups may be assigned, most applications require just 1 or 2 board groups. A few board group schemes are shown below.



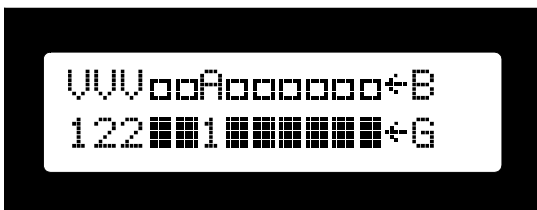
OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

All six boards are assigned to Group 1.
All video, sync, and audio signals switch together (audio-follow-video switching).



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

Boards 1 - 5 (RGBHV) are assigned to Group 1.
Board 6 (stereo audio) is assigned to Group 2.
This board group configuration allows for audio breakaway switching, where video and audio signals may be switched independantly.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

Boards 1 & 6 are assigned to Group 1.
#1 Composite Video
#6 Stereo Audio
Boards 2 & 3 are assigned to Group 2.
#2 Y Component of S-Video
#3 C Component of S-Video

Assigning Board Groups

The assign board group procedure is done at the time the Pathfinder is set up by the installing technician. *Changing board group assignments requires the Pathfinder firmware to be reinitialized and all information stored in memory registers will be lost.* For information on how to assign board groups, see pages 5 - 7 in the Quick Install section.

Viewing and Selecting Board Groups

The MAIN MENU includes a selection called GROUP MAPPING. This may be used for two purposes:

- View the current board grouping configuration (which boards are assigned to which groups)
- View the input / output configuration for each group.

To View Board Group Configuration:

#1 Press **MENU** to enter the Main Menu selections.

#1 Press the ▲ or ▼ keys until the display reads:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#2 Press **ENTER** to select the Group Mapping menu. The current board group assignment is displayed.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

To View Input / Output Information for Board Groups:

#4 After the steps listed above press the ▲ key to see the number of inputs and outputs for each group. Each time the button is pressed the display will step to the next group until the last group is viewed. The display here shows that Group 1 has 8 inputs and 8 outputs.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

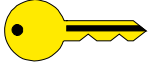
#4 At this point you may also select a specific board group. Press the ▲ or ▼ keys until that group information window is displayed and press **ENTER**. This board group is now selected.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

Selecting Board Groups

KEY CONCEPT



While you may use the multi-step procedure described on the previous page to switch to a different board group, the short cut described below allows you to quickly view the current Input/Output patches for each board group. It also lets you carry out front panel switching control for the various board groups.

- #1 Press **MENU** to enter the PATH CONFIG display.
- #2 While holding the **MENU** key, click on the **▲** or **▼** keys. The display will change to each of the board groups.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

CONFIGURATION MEMORIES

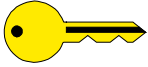
HR Series Pathfinders feature ten configuration memories. These store all input / output patches for all board groups. By storing commonly used configurations it is easy to recall them using either the front panel or a very simple serial command.

Storing Configuration Memories

- #1 Press **MENU** to enter the PATH CONFIG mode.
- #2 Using the procedure described in the preceding pages set all input / output patches as desired.
- #3 Press the **SAVE** key. The screen will show the current memory number.
 - To store the current I/O configuration into the current memory press **ENTER**.
 - To save the configuration into a different memory press a number key corresponding to the desired memory and **ENTER**.
- #4 The display will change back to PATH CONFIG.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

KEY CONCEPT

If your system operation requires multiple complex I/O configurations which are similar with only slight variations, you may use the procedure listed above to store an identical input / output configuration into several configuration memories. Now go back to each memory and change the specific I/O patches needed to make each memory unique.

Recalling Configuration Memories

Stored configuration memories may be recalled in three ways:

FRONT PANEL

- In **PATH CONFIG** mode: Press **RECALL**, a number from 0 to 9, and **ENTER** (see below)
- In **RECALL** mode - simply press any number from 0 to 9 (page 15)

SERIAL PORT

- Send a short serial command to recall a pre-stored memory (page 22)

Recalling Memories with the Recall Button

#1 Press **MENU** to enter the **PATH CONFIG** mode.

#2 Press **RECALL**. The display shows the current memory:



#3 Press any number from **0 - 9**.

OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#4 Press **ENTER** to recall the memory and execute the new patches. The display changes back to **PATH CONFIG** showing the new input / output configuration.

RECALL MODE

Recall Mode offers a simplified mode of operation, especially designed for situations where the PATHFINDER HR will be controlled from the front panel for a presentation or show. Using the Recall Mode, pre-stored memories may be recalled and executed by touching a single button (0 - 9). Once placed into the Recall Mode all front panel controls except for the 0 - 9 buttons are disabled. Since all advanced settings such as RS-232 communication settings, board groups, or memories are locked away and may no longer be changed from the front panel, Recall Mode is ideal for use by non-technical users or any other time it would be desirable to provide a simplified, fool-proof mode of switching operation.

Entering Recall Mode and Recalling Memory Configurations

#1 Press **MENU** to enter the **MAIN MENU** selections.

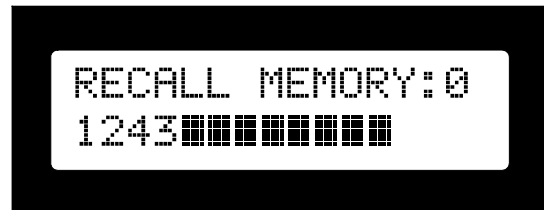
#2 Use the ▲ or ▼ keys to step through the menu options until the following screen is displayed:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#1 Press **ENTER** to select Recall mode and the display will show:

In this example, the switcher is currently in Memory 0. The current Input / Output patches are shown on the bottom row of the display (the same as PATH CONFIG).



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#2 To recall a different memory, simply press a single button from **0 - 9**. Each time a number button is pressed the new memory is instantly recalled and executed. *There is no need to press ENTER.*

Exiting Recall Mode

Since this mode is intended to lock away features from non-technical users, there is no menu selection to leave Recall Mode. To exit Recall Mode, press and hold **MENU** for 3 seconds. The unit will return to the **PATH CONFIG** menu and all menus are now accessible.

ADVANCED CONTROL OPTIONS

The Main Menu selections described in the section control advanced technical features. Most users will not need to enter any of these selections and these settings should only be changed by qualified technicians.

RGB DELAY

RGB delay is a special feature designed to help eliminate the on-screen resizing and other strange effects often viewed on data projectors and monitors when changing between RGB sources with different scan rates or sync formats.

Pathfinder switchers normally switch all boards simultaneously whenever a new switch is executed (assuming all boards are in the same group). When RGB delay is engaged, the Pathfinder works in the following way to execute a new input / output patch:

- The RGB channels are blanked and the sync signal(s) from the new input source are instantly connected.
- After the specified delay time the RGB signals for the new input source connected to the output.

By sending the sync signal(s) first and the RGB components later, the data display has time to lock up to the new signal before any image appears. The viewer will see black on the screen for the duration of the RGB delay and then a completely stable new image will appear.

RGB delay may range from 0 seconds to 6 seconds in half second intervals. In order to use RGB delay effectively the following conditions are required:

- All sources must be in the RGBS or RGBHV format.
- The board groups must be set so that all boards are in Group 1.

Optimizing RGB Delay Time

In order to set RGB delay to the optimal value, it is suggested that the display technician perform tests using various input sources to determine the average and maximum times required by the display device to display a stable image after input sources have been changed. The delay time should then be set to one of the following values:

- The next time increment greater than the average time required for the projector to display a stable image.
- The next time increment greater than the maximum time required for the projector to display a stable image.

Realizing that every time a new input is selected the viewer will see black on the screen for the selected delay time, the RGB delay time should be kept as short as possible.

Setting RGB Delay

#1 Press **MENU** to enter the Main Menu Selections.

#2 Press the up or down arrow keys until the following screen is displayed:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#3 Press **ENTER** to select the RGB Delay menu. This example shows that RGB delay is currently disabled.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#5 Press the **▲** or **▼** keys until the desired delay time is displayed.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#6 Press **ENTER** to save the new delay time (or press **MENU** to exit without any change).



#4 OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

RESETTING THE UNIT TO FACTORY DEFAULTS

It is possible that you may wish to reset the unit to factory defaults. To do this press and hold the 0 button while turning on power. **All memory configurations will be erased** and the following defaults will be set:

Unit will search for number and type of switching boards.

All boards will be assigned to Group 1

I/O Configuration: --Fixed: Actual number of inputs / outputs

--Reconfigurable: 4 inputs, 2 outputs

Baud Rate: 1200

Command Codes: []

RGB Delay: 0.0 seconds (disabled)

Remote Control Only Mode: Disabled

REMOTE CONTROL ONLY

This option may be selected if the switcher will only be controlled from the serial port. Once placed in the Remote Control Only mode the LCD display back light turns off and the front panel buttons are disabled. All setup and switching operations may only be performed through the serial port.

To enter Remote Control Only mode:

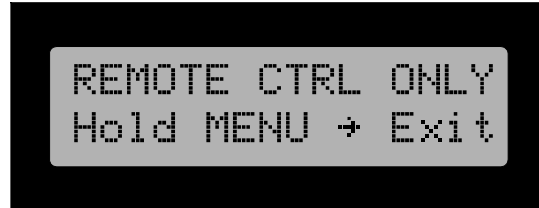
#1 Press **MENU** to enter the Main Menu Selections.

#1 Press the up or down arrow keys until the following screen is displayed:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#2 Press **ENTER** to select Remote Control Only. The LCD back light turns off and the following screen is displayed.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

To Leave the Remote Control Only Mode:

Press and hold the MENU button for three seconds. The LCD back light will turn on, PATH CONFIG will be displayed and the front panel controls are now operational.

SYSTEM INFORMATION

To get information about the firmware for a Pathfinder HR switcher:

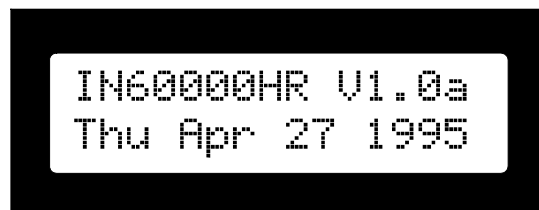
#1 Press MENU to enter the Main Menu selections.

#1 Use the ▲ or ▼ keys until this screen is displayed:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#2 Press ENTER to display system information. This display shows that the Pathfinder is using firmware version 1.0a which was last updated on Thursday, April 27, 1995.



#3 Press any key to exit.

OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

SERIAL CONTROL OPERATIONS

USING RS-232 CONTROL

The PATHFINDER HR series switchers include an 9-pin REMOTE CONTROL port which will accept serial commands from a control system, computer serial port, or any other device capable of sending out serial ASCII commands at compatible baud rates. All switching, mode selection (except Recall Mode), and set-up parameters can be controlled using RS-232 commands.

Details on the commands above, and a complete listing of RS-232 codes is included on page 22.

COMMUNICATION PROTOCOL

8 data bits

1 stop bit

No parity check

1200 baud (factory default setting)

BAUD RATE SELECTION

The PATHFINDER HR has a factory default baud rate of 1200 and can communicate at baud rates from 1200 up to 19200.

Displaying / Selecting the Baud Rate

#1 Press **MENU** to enter the MAIN MENU selections.

#1 Use the ▲ or ▼ keys to step through the menu options until the following screen is displayed:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#1 Press **ENTER** to select this option and the display will show the current baud rate:

If this setting meets your requirements, press **MENU** to exit.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#2 To select another baud rate, press the up or down arrow buttons until the desired baud rate is displayed. Press **ENTER** to select the new baud rate. The display will show:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

COMMAND CODE STRUCTURE

All commands sent to the unit must contain a leading code, the command code, and an ending code. When a command is completed, the unit provides a response code; "OK" indicates the command was received and executed, "ERR" indicates there is a problem with the code and the command was not executed.

INLINE products can be set to recognize one of four sets of leading codes and ending codes. These are: [] { } () < > . The factory default for leading / ending codes is [] .

A complete command consists of:

[The leading code
CALL3	The command code. CALL3 recalls memory configuration #3.
]	The ending code

Sample command codes:

[SAVE2]	Saves the current input / output configuration into memory #2.
[PT1O08I04]	Executes a switch. Input 04 is connected to Output 08 for all boards in Group 1.

Displaying / Selecting the Command Code

#1 Press **MENU** to enter the
MAIN MENU selections

#2 Use the ▲ or ▼ arrow
buttons to step through the
menu options until the
following screen is displayed:



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

#1 Press **ENTER** to select this
option and the display will
show the current command
codes. The * shows that [] are
the current command codes.

If this setting meets your
requirements, press **MENU** to
exit.



OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

To select a different command
code, press a number from 1 to 4
corresponding to the desired
delimiter pair. Press **ENTER** to
select the new codes. The display
will show:



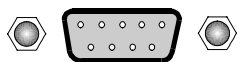
OUTPUT 1 2 3 4 5 6 7 8 9 10 11 12

Controlling Multiple INLINE Products

INLINE products such as the **Pathfinder HR, Pathfinder, IN1010 / IN1024 / IN1224 / IN1424** scan doublers and the **IN1510 / IN1540 / IN1710** decoders use a similar communications protocol and command code structure. By setting each unit to a different command code pair, up to four different INLINE products can be controlled by a single RS-232 serial control port. Once a unit is set to look for a certain pair of leading and ending delimiters (command codes), it will ignore all other commands sent by the port.

When daisy chaining multiple units together the 9-pin RS-232 control cable between the units must be wired in parallel. The receive pin on all units must be connected together. Do not connect the transmit pin between units.

CONTROL PORT PIN-OUTS



The RS-232 control port is located on the rear panel just above the power entry module. The control port uses a 9-Pin D male connector and the pin outs are:

<u>Pin #</u>	<u>Signal</u>
2	Transmit
3	Receive
5	Ground

SERIAL COMMANDS

COMMAND	DESCRIPTION	RESPONSE
ACI3 *	Set to 1200 baud rate, <i>default setting</i>	[OK]
ACI4 *	Set to 2400 baud rate	[OK]
ACI5 *	Set to 4800 baud rate	[OK]
ACI6 *	Set to 9600 baud rate	[OK]
ACI7 *	Set to 19200 baud rate	[OK]
CMDCD0	Select command code "[" & "]" <i>default</i>	[OK]
CMDCD1	Select command code "{" & "}"	[OK]
CMDCD2	Select command code "(" & ")"	[OK]
CMDCD3	Select command code "<" & ">"	[OK]
CALLs	Recall configuration from SETUPs s: 1 byte ASCII code, ranges from 1 - 8	[OK]
SAVEs	Save current configuration to SETUPs s: 1 byte ASCII code, ranges from 1 - 8	[OK]
PTgOmmInn	Execute a switch. Connect Input <i>nn</i> to Output <i>mm</i> for Group <i>g</i> . <i>g</i> : Group #, a 1 byte ASCII code, ranges from 1 - 6 <i>nn</i> : Input #, a 2 byte ASCII code. If <i>nn</i> = 00, no input is selected, resulting in a blank output. <i>mm</i> : Output #, a 2 byte ASCII code Exp: "[PT1008I04]" Connect Input #4 to Output #8 for the boards in Group 1	[OK]
Lgo1o2o3...	Load a new path for Group <i>g</i> . The switch is not executed until the "[SW]" command is sent. <i>o_n</i> : 2 byte ASCII code representing the Input# to be connected to output # <i>n</i> . Exp1: "[L104050003]" Load a new path for Group #1 as follows: Input #4 to Output #1, Input #5 to Output #2, Input #0 to Output #3 (disconnect), and Input #3 to Output #4. Exp2: "[L1020101,L2101107]" Load a new path for Group #1 as follows: Input #2 to Output #1, Input #1 to Output #2, Input #1 to Output #3. Load a new path for Group #2 as follows: Input #10 to Output #1, Input #11 to Output #2, Input #7 to Output #3	[OK]
SW	Execute all switch connections as defined by the L command.	[OK]
RGBx.x	Set RGB delay to <i>x.x</i> seconds. <i>x.x</i> : ranges from 0.0 to 6.5 in 0.5 second intervals. Exp: "[RGB3.5]" Set RGB delay to 3.5 seconds. Note: Normally, the RGB delay is only used when boards 1, 2, 3 & 4 are all in the same group. However, the RS-232 command sets the unit so that it ignores this fact. Therefore, if you do not assign boards 1, 2, 3 & 4 to the same group, you MUST set the RGB delay to 0.0 seconds to ensure proper switching (with no delays.)	[OK]
FP	Enable and disable the front panel operation (toggle between FP0 and FP1)	[OK]
FP0	Disable the front panel operation (put the unit into the Remote Control Only mode). All front panel buttons are disabled (except for the MENU button.) and the back light of the LCD screen is turned off.	[OK]
FP1	Enable the front panel operation (take the unit out of the Remote Control Only mode and Executive mode).	[OK]
FP2	Executive mode. Disable access to Main Menu selections from the front panel (Path Config, RGB delay, RS-232 baud rate, and Command code).	[OK]
INF0	Get the firmware version	[IN6000HR V1.0a]

SPECIFICATIONS

INPUT:

Connectors: Video / Sync 3, 4, or 5 female BNC for RGsB, RGSB, RGBHV
 Audio 2 RCA female or Phoenix Brand Captive Screw Terminals for Audio Left / Right

Signal Levels: Video +/- 3.0 Volts before clipping (terminated signal)
 Sync +/- 5.0 Volts
 Audio High Impedance: +/- 8 Volts
 Low Impedance (600 Ohms): +/- 4 Volts

Impedance: Video / Sync 75 ohms
 Audio 600 ohms

Coupling: DC coupling employed on all channels
Any input signal DC offset voltage should be limited to +/- 0.5 VDC to allow for an acceptable signal swing without distortion

OUTPUT:

Connector: Video / Sync: 3, 4, or 5 female BNC for RGsB, RGSB, RGBHV
 Audio: 2 RCA female or Phoenix Brand Captive Screw Terminals for Audio Left / Right

Gain: Unity - Output level identical to input level

Bandwidth @ -3dB: Video >200 MHz any channel / any number of outputs
 Sync >2 MHz
 Audio DC to 20 KHz

Rise / Fall Times: Video <1.75 nSec
 Sync <150 nSec

Overshoot: < 5%

Crosstalk: > -40 dB @ 10 MHz
 > -67 dB @ 5 MHz

Off Isolation: > -65 dB @ 10 MHz

GENERAL:

Accessories Included:	Rack Mount Ears, AC Cord (US domestic units only), Operations Manual
Power Supply:	Universal / Switch Mode - Operates within following range: 90 - 260 VAC / 47-90 Hz
Power Consumption:	42 Watts
Shipping Weight:	19 lbs. [8.6 Kg]
Product Weight:	13 lbs. [5.9 Kg]
Dimensions:	5.25 x 17 x 12.2 inches [13.33 x 43.18 x 30.99 cm]

WARRANTY

- ◆ INLINE warrants the equipment it manufactures to be free from defects in materials and workmanship.
- ◆ If equipment fails because of such defects and INLINE is notified within two (2) years from the date of shipment, INLINE will, at its option, repair or replace the equipment at its plant, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications.
- ◆ Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of re-shipment to the Buyer.
- ◆ **This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.**

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