A WORLD OF A/V SOLUTIONS

INTERFACES

IN2112R

HIGH RESOLUTION RACK MOUNTABLE INTERFACE WITH 2 INPUTS AND STEREO AUDIO SWITCHING

IN2112R

OPERATION MANUAL

High Resolution Video Products • A/V System Integration Tools • Interactive Training Systems

Installation and Safety Instructions

For Models without a Power Switch:

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

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.

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 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.

Installations- und Sicherheitshinweise

Für Geräte ohne Netzschalter:

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

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.

Instalacion E Instrucciones de Seguridad

Modelos Sin Interruptor:

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

Para Todos Los Modelos:

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

Modelos con Fusibles Internos o Externos:

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

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.

CE

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

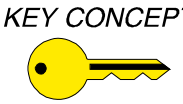
DESCRIPTION

The **IN2112R** is a high-performance computer video interface for analog video signals including VGA, SVGA, XGA, MAC, Sun and other high-resolution workstations. The **IN2112R** combines high-resolution computer interfacing with two inputs, modular A/V connector plates and front panel A/C power outputs into a 2U rack mountable unit. This highly integrated approach gives audiovisual professionals the ability to quickly design and install functional, customized computer interfacing and A/V connectivity solutions for a broad spectrum of applications.

Like other INLINE interfaces, the **IN2112R** performs the following functions:

- **Signal Splitting -** allows the simultaneous connection and viewing of both the computer's local monitor and a second output device such as an LCD data projector or a presentation monitor.

- **Physical Interfacing -** Because computers employ many different types of video output connectors, it is sometimes difficult to directly connect them to data projection devices. The **IN2112R** simplifies interfacing, routing and switching tasks by acting as a universal adapter. Through the use of removable input cables, the **IN2112R** can be attached to different computers and will provide a video output signal on five BNC connectors. The output signal may be set to RGBHV (default), RGBS or RGsB formats.



*The **IN2112R** is <u>not</u> a scan converter. The data projector, monitor or other output device must be compatible with the horizontal scan rate output by the computer video card.*

PRODUCT FEATURES

Rack Mountable Unit - Featuring integral rack mounting ears, the **IN2112R** is specifically designed to mount in a standard 19' equipment rack in a 2U space; no additional rack shelves or rack ears are required. The interface has a sleek black finish that blends well with other rack mounted equipment, complementing the decor of boardrooms, training facilities, control rooms and other high-tech / high profile installations featuring exposed equipment racks.

Two Input Switcher - Users may select Input 1 or Input 2 using a front panel switch. Front panel LEDs illuminate to indicate the current input. In Autoswitch mode, the interface senses which input has an active signal and switches automatically. If both inputs are active, Input 2 has priority. Input 1 or 2 may be selected remotely via contact closure.

Modular Faceplate - Capable of holding up to eight A/V connector plates, the **IN2112R** can accommodate the exact connectors required for each installation. Dozens of engraved connector plates are available for audio, video, computer, data and phone connections. INLINE can provide custom engraving services to label the connector plates as required for various applications (additional charge for custom engraving). Available A/V modules are listed on pages 12-13.

Front Panel A/C Power Outlets - The **IN2112R** has front panel power outlets (600 watts total) that provide a convenient place to plug in a laptop computer, CD player or other portable A/V device that will be located in front of the equipment rack. Three models are available for each interface to support various A/C socket types worldwide:

IN2112R	(2) Edison outlets
IN2112R - IEC	(2) IEC female outlets
IN2112R - EU	(1) Schuko outlet

15-Pin HD VGA Standard Connectors - The **IN2112R** connects directly to VGA graphics cards and VGA local monitors using high-resolution coaxial VGA extension cables such as the **IN8000** series. Input / output adapter cable sets (see table on page 5) are also available in a variety of lengths for MAC (15-Pin D), SUN (13W3) and workstations (4 or 5 BNC).

Three Switching Modes - In **Manual Mode**, users select the desired input by pressing the front panel input select button or remotely via serial or contact closure control. **Remote Switching** allows users to select inputs via any device that is capable of latching contact closure. With the **Autoswitch Mode**, the unit automatically selects the active input. If more than one input is active, input 2 has priority.

Wired Remote Control - The optional **IN9465** Rocker Switch provides remote switching capability. This switch duplicates the front panel input select button.

Ultra High-Resolution Amplification - The **IN2112R** provides superb performance and maximum image clarity at any resolution. Several design elements combine to provide this level of performance: video bandwidth in excess of 400 MHz, buffered local monitor output, and input / local monitor output cables constructed of high-resolution coaxial materials.

Stereo Audio Switching - The **IN2112R** accepts unbalanced stereo audio from computer sound cards to support multimedia applications. The stereo audio signal for each input is switched simultaneously with the video signal. The main audio output on the back of the interface (5-pin captive screw terminal) can be set to output an unbalanced or balanced audio signal. The two audio output connectors on the front panel provide a passive loop-through signal from each input and are ideal for local power speakers or a local recording device. These audio outputs are always live, even when the input is not currently selected.

CRT / LCD / DMD / ILA / HDLV / Plasma Friendly Output Signal - The output sync characteristics can be set as needed to match the requirements of virtually any scan rate compatible data display. Internal dipswitches are provided for setting output sync format, sync polarity always negative / mirror input polarities, serration pulse enable / disable, and horizontal control enable / disable.

Selectable Output Sync Format - The unit can be set for RGBHV, RGBS or RGsB output sync as required by the data display device and signal distribution system. The **IN2112R** does not strip sync off the green signal (i.e. RGsB input signals appear at the output as RGsB).

Convenient Controls and Features - A hand-adjustable **horizontal position control** on the **IN2112R** faceplate allows for precise centering of the image within the data display area. The **Auto Power** feature automatically powers up the interface when an input cable is connected to the 15-pin HD input, and powers

down the unit when the input cable is removed. **Auto monitor emulation** emulates a VGA / MAC monitor when no local monitor is present.

In addition the **IN2112R** features:

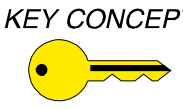
- **Analog Interface -** the unit will operate with Analog Video with TTL level sync signals. The signal can be separate H & V or composite sync.
- **Sync Polarity Preservation Switch -** enables the sync polarity to be preserved, or to be set for negative polarity (for RGBHV signals in and out).
- **Serration Pulse Removal Switch -** (for RGBS or RGsB output) enables the user to remove serration pulses from the sync output.

Compatibility

INPUT

The **IN2112R** will accept high-resolution video signals from virtually any computer that outputs an analog video signal (VGA, SVGA, XGA, MAC, SUN, SGI and other high-resolution computers) at virtually any refresh rate. Input signal compatibility parameters are:

Video Signal:	Analog RGB Video
Signal Format:	RGBHV, RGBS, RGsB*****
Horizontal Frequency Range:	30 KHz to 130 KHz
Vertical Refresh Rates:	30 Hz to 120 Hz



****** *The **IN2112R** will operate with RGsB input signals. However, the unit will not strip sync off of the green. RGsB input signals are always output as RGsB (they cannot be output as RGBS or RGBHV). Also, the horizontal position control will not operate when used with RGsB input signals.*

OUTPUT

The output signal of the **IN2112R** is analog RGB video with TTL sync on 3, 4 or 5 female BNC connectors. The output format can be set to RGBHV, RGBS or RGsB using dipswitches. This output signal is compatible with high-resolution data grade monitors and data / graphics projectors.

KEY CONCEPT

VGA, MAC, SUN, SGI and other high-resolution workstations operate in several video modes encompassing a wide range of resolutions and scan rates. Many of the video signals from the newest models can run as high as 70 KHz or more, with the newest VGA cards offering an output resolution of 1600 x 1200 (some can even go as high as 1920 x 1080). The data projector or monitor connected to the interface output must be compatible with the horizontal scan rate and vertical refresh rate of the computer's video signal. Please check the documentation for both the computer graphics card and the data display device to ensure compatibility.

ADAPTER / EXTENSION CABLES FOR INPUT AND LOCAL MONITOR OUTPUT

The **IN2112R** has 15-pin HD VGA-type connectors for input and local monitor output. The following input and local monitor output cables are available:

Computer	3'	6'	12'	25'
VGA: 15-Pin HD				
Input Cable		**IN8006**	**IN8012**	**IN8025**
Output Cable (Optional)		**IN8006**	**IN8012**	**IN8025**
MAC with 15-Pin D:				
Input Cable		**IN9140**		**IN9144**
Output Cable	**IN9141**			**IN9145**
MAC G3, G4 and PowerBook with 15-Pin HD*:				
Input Cable		**IN8006**	**IN8012**	**IN8025**
Output Cable		**IN8006**	**IN8012**	**IN8025**
SUN: 13W3 (may also be used with SGI with RGsB output)				
Input Cable		**IN9142**		**IN9146**
Output Cable	**IN9143**			**IN9147**
Workstation: 5 BNC				
Input Cable		**IN9048**	**IN9046**	**IN9046-L25**
Output Cable		**IN9047**	**IN9045**	**IN9046-L25**
Workstation: 4 BNC				
Input Cable		**IN9100**		

*Newer Mac G3 models (with translucent cases) have 15-Pin HD connectors (pins arranged in 3 rows).
Older G3 models (with solid white enclosures) incorporate 15-Pin D connectors (pins arranged in 2 rows).

Note: The input / output cables listed above can be used with any of the following interfaces, distribution amplifiers and switchers:

IN2100
IN2110
IN2111 Series
IN2112 Series
IN2114 Series
IN2116
IN2200
IN3260
IN3262 Series
IN3264
IN3268
IN3600 Series

Installation

This section offers instructions for installing the **IN2112R** interface (see **Application Diagram** on page 7).

1. Utilizing the integral rack mounting ears, mount the unit in a standard 19" equipment rack (or larger) in a 2U space. Run the necessary video coax cable, power cabled any other audio, video, phone, data or control / accessory cables (if used) to the unit.

2. Set the dipswitches for the requirements of your installation (see **Dipswitch Settings** on page 9). The **IN2112R** factory default output format is RGBHV. If your display device, routing system or cabling requires a different format, use the dipswitches to change the output signal to RGBS or RGsB as desired. For best results with LCD / DMD / ILA / D-ILA / Plasma Display devices, please refer to Page 8.

3. Connect the **IN2112R** output (5 BNC connectors) to the data display device's RGB input, using three, four or five high-resolution BNC cables or a multi-conductor RGBHV, RGBS or RGB "snake". The **IN7000 / IN7100 / IN7200 / IN7300 Series** high-resolution cables and the **IN8800 Series** installation cables are well suited for this purpose. While making connections, take care to insure that the red output is connected to the red input, green output to the green input, etc.

4. Connect the audio cable to the appropriate pins on the **IN2112R** 5-pin Phoenix connector (see diagram on page 10). Make sure that the four jumpers located near the audio output connector are set for the appropriate position for unbalanced or balanced stereo audio output as required by the installation. The factory default setting is unbalanced audio output. Connect the audio output wires to the appropriate connectors:
   Unbalanced Output - connect to the Left, Right and Ground connectors.
   Balanced Output - connect to Left +, Left-, Right+, Right- and Ground connectors.

5. Connect cables (if applicable) as required to the backside of the **IN93XX** A/V connector modules, and secure the modules to the **IN2112R** faceplate.

6. For applications incorporating remote switching, remove the cover (top and side screws) and refer to the **Internal Connector Control Diagram** on page 8. Installers can utilize an optional **IN9465** Rocker Switch Module, which duplicates the front panel input select button. Remote switching allows users to select inputs via any device that is capable of latching closure.

7. Connect the power. The power connector has a sticker showing the correct polarity. **Be extra careful to connect the positive to the (+) connector and the negative to the (-) connector. Connecting the power with the reverse polarity may permanently damage the unit! If in doubt, measure the power cable with a voltmeter to verify the positive and negative terminals.** You may also use the optional **IN9210** rack mounted power supply which will power up to 10 interfaces. The cable used to connect the power supply to the interface should be 18 gauge to 22 gauge, depending on its length. The INLINE **IN8500P-2** power cable is well suited for this application.

8. If the **IN2112R** will use a remote input selection, connect the remote control cables to the appropriate connectors (see diagram on page 8). The remote connector requires a latching connection and works in conjunction with the front panel selector switch. Each time the remote connector circuit is opened or closed the **IN2112R** will select the opposite input. This could be either input 1 or input 2 depending on the position of the Input Select Switch (located on the front panel). The **IN2112R** remote connector has a **STATUS** pin that can provide feedback to a control system or remote button to indicate which input is currently selected. When the **STATUS** pin is low, this indicates that Input 1 is currently selected. If the **STATUS** pin is high, Input 2 is selected. Installers can incorporate an optional **IN9465** Rocker Switch Module for remote switching.

9. Turn the computer and computer monitor off. Disconnect the computer monitor (if present) from the video output port on the computer.

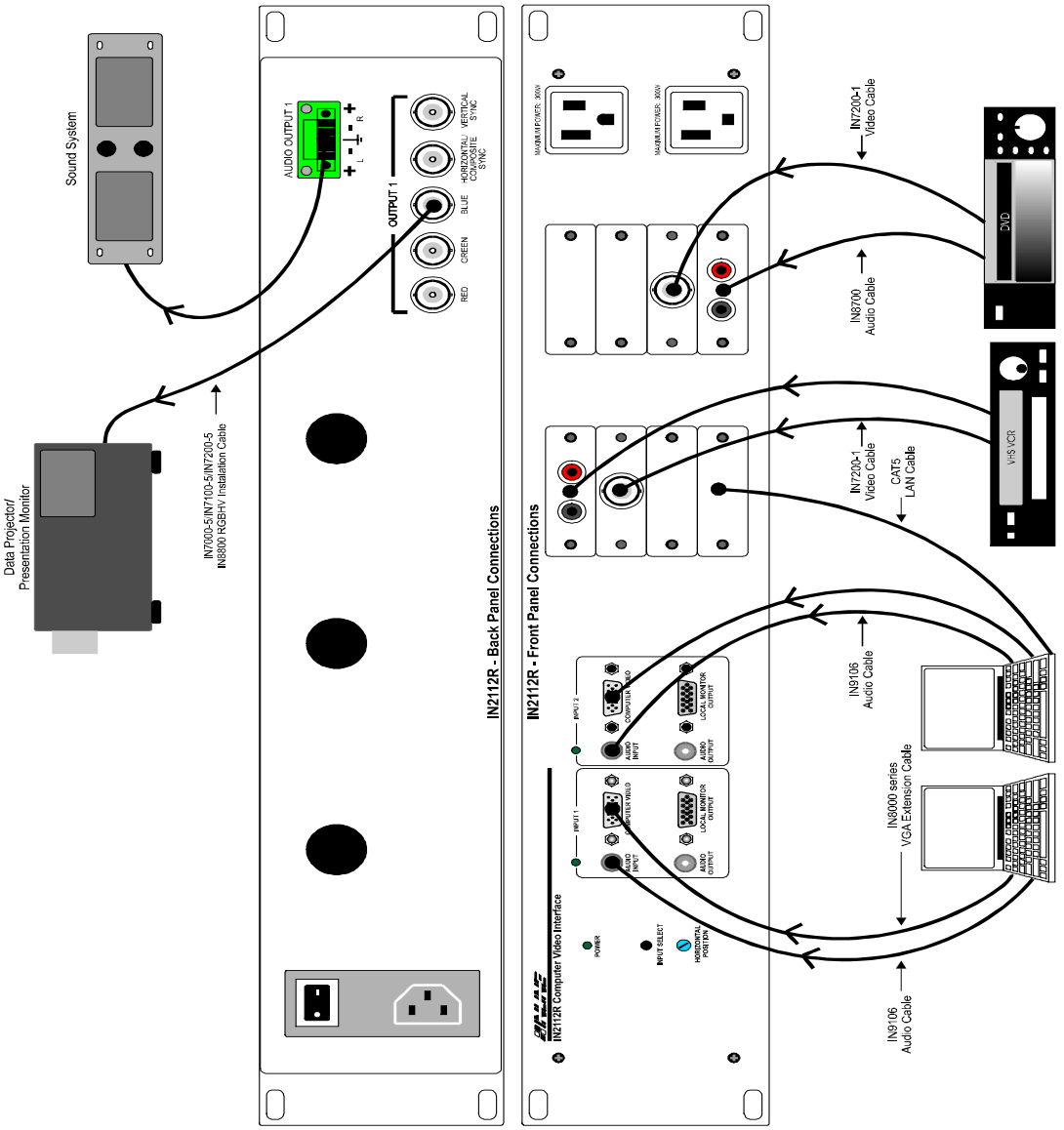
10. Connect the local computer monitor (if present) to the local monitor output of the **IN2112R**. VGA monitors will attach directly to the local monitor output. For other types of monitors, use the appropriate local monitor output adapter cable (see list on page 5). If no local monitor is used, set the monitor emulation dipswitch to emulate a color VGA monitor or a 13/14" MAC RGB monitor.

11. Connect the output of the computer to the input of the **IN2112R** with the appropriate input cable.

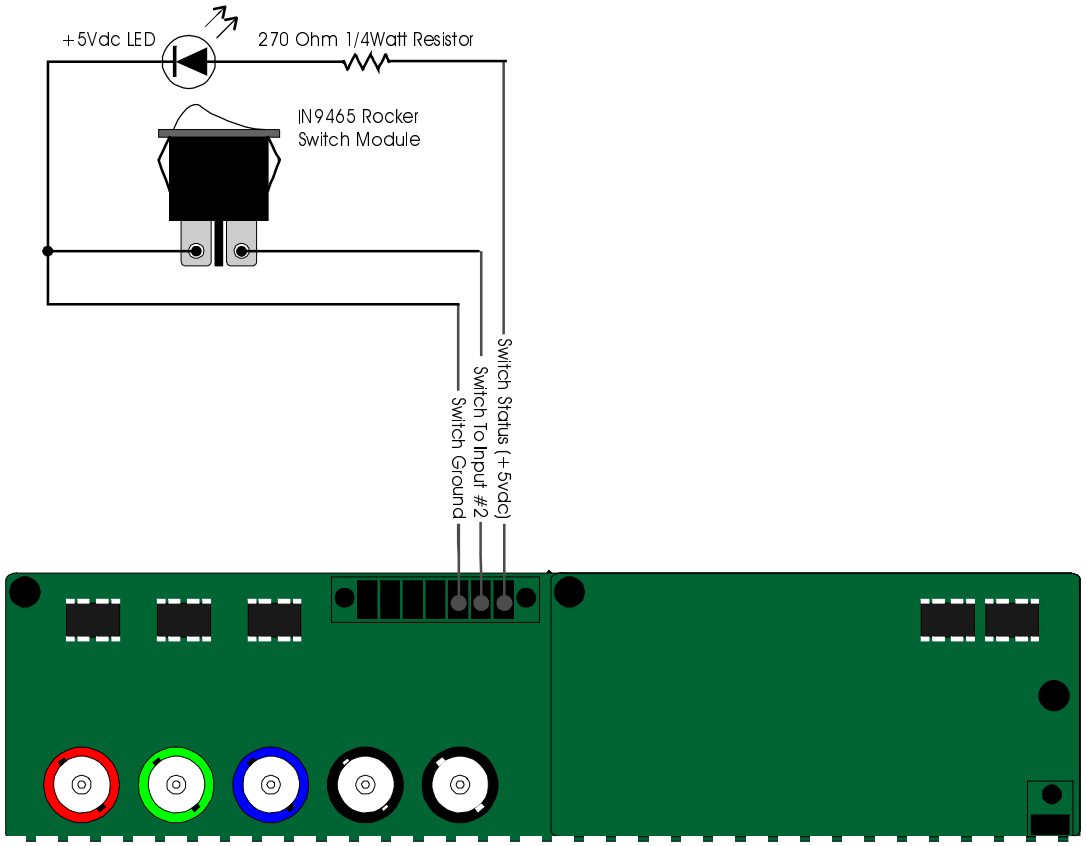
12. Connect the computer sound card output (if present) to the audio input connector using an **IN9106** audio patch cable. For computers with RCA connectors, use the **IN9107** audio adapter cable. Connect powered local speakers (if present) to the local audio outputs.

13. Complete the installation by turning the computer and computer monitor on. If required, adjust the horizontal position control to center the image on the date display device (see page 9). The user will override the input select button by applying the optional **IN9465** Rocker Switch.

IN2112R APPLICATION DIAGRAM



IN2112R INTERNAL CONTROL CONNECTION WITH OPTIONAL IN9465 ROCKER SWITCH*



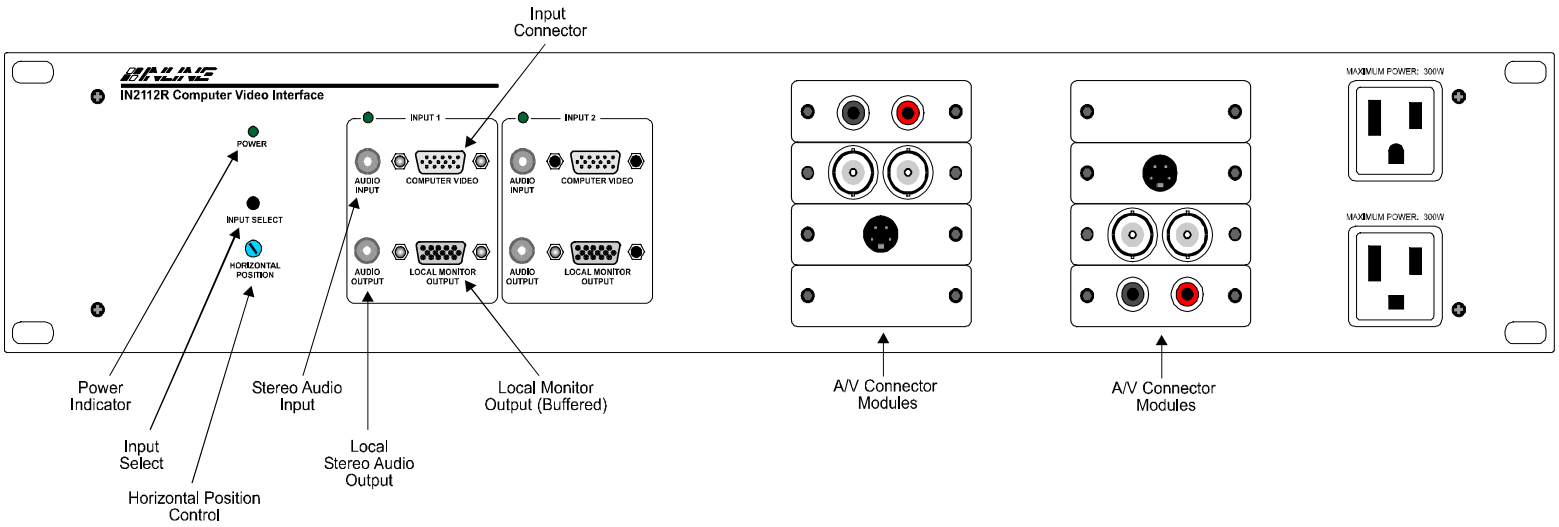
*Cover must be removed to connect remote

OPTIMAL SETTINGS FOR LCD / DMD / ILA / D-ILA / PLASMA DISPLAYS

The following output sync settings provide maximum sync signal preservation and are recommended for best image quality with LCD / DMD / ILA / D-ILA / Plasma Display devices. Depending on the design of the display device's sync processing circuitry, you may be able to set the horizontal position control to the enabled position, however, experimentation with your display device is the best way to determine whether you can achieve a stable image with the horizontal position enabled. Most LCD displays include a fine phase control, which can be adjusted to optimize picture quality.

Dipswitch Setting:	#2 Set to ON / All other dipswitches set to OFF
Signal Format:	Red / Green / Blue / Horizontal and Vertical Sync
Horizontal Position Control:	Disabled
H & V Sync Polarity:	Mirror Input Polarities

IN2112R FRONT PANEL CONNECTORS AND CONTROLS



HORIZONTAL POSITION CONTROL

The location of the horizontal position control is shown above. The horizontal position control adjusts the position of the image on the data display device from left to right (it has no effect on the local computer monitor).

Many data projectors and monitors have their own horizontal position control, and the interaction of the display devices and the interface's horizontal controls may result in a dark image on the data display. The following procedure is suggested to ensure best results:

1. Adjust the **IN2112R** horizontal position control so a good quality image is displayed. This control should not be set to an extreme position.

2. Adjust the display device's horizontal position control until the image is centered as desired.

3. If the image appears dark or the colors are not properly displayed, fine tune the controls on both the display device and the interface until the picture is centered and a good quality image is attained.

STEREO AUDIO SWITCHING

The **IN2112R** provides stereo audio-follow-video switching to accommodate stereo audio signals from a computer audio card or other stereo audio sources. Whenever Input 1 or Input 2 is selected, the corresponding stereo audio signal is routed to the audio output connector on the back of the interface, which is normally connected to a house sound system.

AUDIO INPUTS

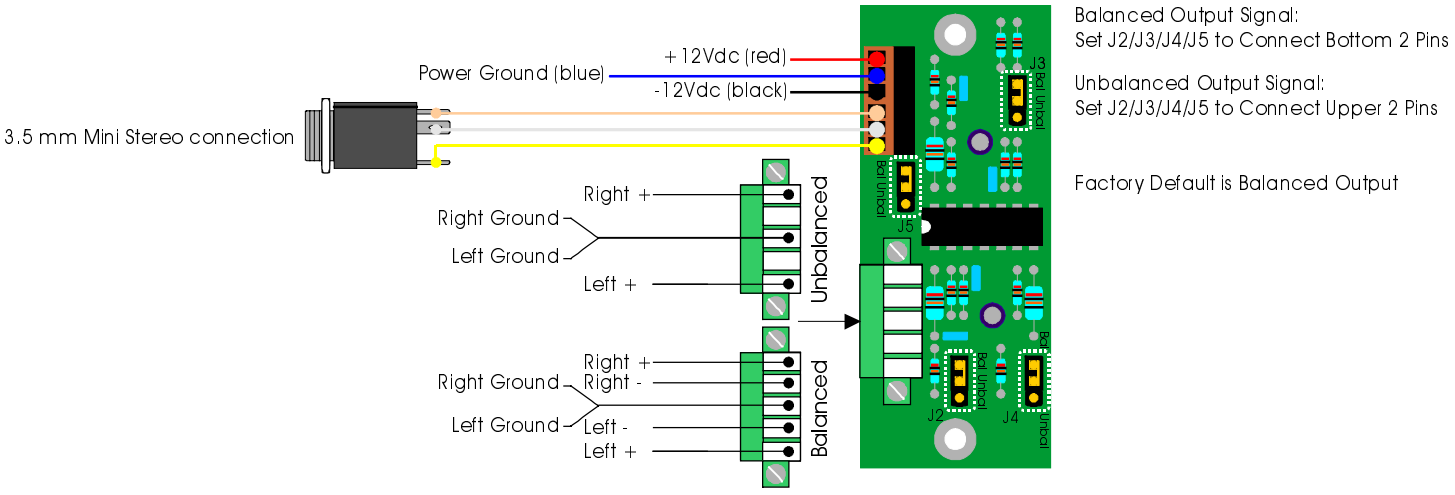
One 3.5mm female stereo mini jack is provided for each input. The input signal can be mono or stereo unbalanced audio (line level or 8 ohm).

AUDIO OUTPUTS

One 3.5mm female stereo mini jack is provided for each local output. The audio output connectors on the front of the interface provide a passive loop-out signal from the **AUDIO INPUT** connector. The audio output connectors can drive local powered speakers. If the input signal is line level, the local audio outputs can also be connected to a local recording device. The signal is always passed from the input to the local audio output whether that input is currently selected or not.

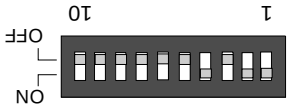
MAIN STEREO AUDIO OUTPUT

One 5-pin captive screw terminal is provided on the backside of the interface for stereo audio output (see **Application Diagram** on page 7). This connector outputs an audio signal from either Input 1 or Input 2 depending on which input is currently selected. The main audio output is set at the factory for unbalanced audio signal. The output can be set for either unbalanced audio or balanced audio by setting four internal jumpers located immediately adjacent to the 5-pin stereo audio connector as indicated below. When the unit converts an unbalanced input signal to balanced output, the gain remains constant.



DIPSWITCH SETTINGS

Most installations will not require any changes to the dipswitch settings, and the **IN2112R** will generally be operated with the factory default settings. The Factory Default settings and specialized dipswitch settings are indicated below. Please note that when the interface is held upright, the dipswitches are numbered from 10 to 1 as shown below.



Factory Default Settings:	
Dipswitches ON:	1, 2, & 4
Signal Format:	Red / Green / Blue / Horizontal and Vertical Sync
Horizontal Position Control:	Enabled
H & V Sync Polarity:	Negative, Negative
Serration Pulse Generator:	Serration Pulses Enabled
Monitor Emulation Input 1:	Auto Termination Enabled
Monitor Emulation Input 2:	Auto Termination Enabled
Autoswitching:	Disabled

The table below lists the functions of the 10 dipswitches:

Switch	Function	Setting	
1	Horizontal Position Control	On Off	Horizontal Position Enabled* Horizontal Position Disabled
2	Output Sync Format Selection: Select Sync on Green or Separate Sync	On Off	RGBS / RGBHV* Sync on Green
3	Output Sync Format Selection: Select RGBS or RGBHV	On Off	RGBS RGBHV* (Switch 2 must be On in order to get RGBS or RGBHV Output Format)
4	RGBHV Output Polarity	On Off	Negative Sync Polarities* Mirror Input Polarities
5	Serration Pulse Generator	On Off	Serration Pulses Disabled Serration Pulses Enabled*
6	Input A Monitor Emulation - Pin 11	On Off	Pin 11 Always Grounded Pin 11 State Set by Auto Termination*
7	Input A Monitor Emulation - Pin 10	On Off	Pin 10 Always Grounded Pin 10 State Set by Auto Termination*
8	Input B Monitor Emulation - Pin 11	On Off	Pin 11 Always Grounded Pin 11 State Set by Auto Termination*
9	Input B Monitor Emulation - Pin 10	On Off	Pin 10 Always Grounded Pin 10 State Set by Auto Termination*
10	Input A/B Auto-Switch	On Off	Auto-Switch Enabled Auto-Switch Disabled*

*Factory Default Settings

AUDIO / VIDEO / PHONE / DATA / SWITCH / COMPUTER CONNECTOR MODULES

Modular A/V Connector Plates & Accessories for:
IN2111 Series / IN2112 Series / IN2114 Series / IN2116 / IN3260 / IN9166 / IN9167 / IN9168

Connector Module Black/White	Description	Front Connector / Termination	Back Connector / Termination	Module Size
IN9350B / IN9350W	Blank Plate - Single Size	None	None	Single
IN9351B / IN9351W	(2) BNC Barrel	(2) BNC Female	(2) BNC Female	Single
IN9352B / IN9352W	(1) S-Video	4-pin Mini DIN Female	4 Bare Wires	Single
IN9353B / IN9353W	(2) RCA	(1) RCA Female - Red (1) RCA Female - Black	(2) Solder Lug Terminal (2) Solder Lug Terminals	Single
IN9354B / IN9354W	(2) ¼" Stereo Phono	(2) ¼" Stereo Phono Female	(3) Solder Lug Terminals	Single
IN9355B / IN9355W	(2) 3.5mm Mini Stereo	(2) 3.5mm Mini Stereo Female	(3) Solder Lug Terminals	Single
IN9356B / IN9356W	(1) 5-PIN Captive Screw Terminal	Phoenix Brand 5-pin Captive Screw Terminal	(5) Solder Lug Terminals	Single
IN9357B / IN9357W	(2) F-Connector Barrel	(2) F-Connector Female	(2) F-Connector Female	Single
IN9358B / IN9358W	(1) RJ11	RJ11 Female - Leviton Brand	6-pin Punch Block	Single
IN9359B / IN9395W	(1) RJ45	RJ45 Female - Leviton Brand	8-pin Punch Block for Cat 5 Cable	Single
IN9360B / IN9360W	(1) Contact Closure Switch With LED & (1) 3.5mm Mini Stereo	Square White Single Pole Switch with Integrated LED	(4) Solder Lug Terminals	Single
		3.5mm Mini Stereo Female	(3) Solder Lug Terminals	
IN9361B / IN9361W	(1) 15-pin HD	15-pin HD Female	15-pin HD Female	Single
IN9362B / IN9362W	(1) 15-pin HD	15-pin HD Male	15-pin HD Male	Single
IN9363B / IN9363W	(1) S-Video Barrel & (1) BNC Barrel	4-pin Mini DIN Female	4-pin Mini DIN Female	Single
		BNC Female	BNC Female	
IN9364DB / IN9364DW	(1) 4-pin XLR	Neutrik Brand 4-pin XLR Female	(4) Solder Cups	Double
IN9365DB / IN9365DW	(1) 3-pin XLR	Neutrik Brand 3-pin XLR Female	(3) Solder Cups	Double
IN9366DB / IN9366DW	(1) 6-pin XLR	Neutrik Brand 6-pin XLR Female	(6) Solder Cups	Double
IN9367DB / IN9367DW	Blank Plate - Double	None	None	Double
IN9368TB / IN9368TW	Blank Plate - Triple	None	None	Triple
IN9369QB / IN9369QW	Blank Plate - Quad	None	None	Quad
IN9372DB / IN9372DW	A/V Super Module: (2) RCA - Audio & (1) RCA - Video & (1) S-Video	RCA Female - Red	(2) Solder Lug Terminals	Double
		RCA Female - Black	(2) Solder Lug Terminals	
		RCA Female - Yellow	(2) Solder Lug Terminals	
		4-pin Mini DIN Female	4 Bare Wires	
IN9373B / IN9373W	(2) RCA Barrel	(2) RCA Female	(2) RCA Female	Single
IN9374B / IN9374W	(1) 9-Pin D Gender Changer – Female	(1) 9-pin D Female	(1) 9-pin D Female	Single

Connector Module Black/White	Description	Front Connector / Terminal	Back Connector / Terminal	Module Size
IN9375B / IN9375W	(2) Keyboard / Mouse Connectors	(2) 6-pin Mini DIN Female	(2) 6-pin Mini DIN Female	Single
IN9376B / IN9376W	A/V Super Module with Barrel Connectors: (2) RCA - Audio & (1) RCA - Video & (1) S-Video	RCA Female - Red	RCA Female	Double
		RCA Female - Black	RCA Female	
		RCA Female - Yellow	RCA Female	
		4-pin Mini DIN Female	4-pin Mini DIN Female	
IN9377DB / IN9377DW	(2) RCA - Audio & (1) RCA - Video	RCA Female - Red	(2) Solder Lug Terminals	Double
		RCA Female - Black	(2) Solder Lug Terminals	
		RCA Female - Yellow	(2) Solder Lug Terminals	
IN9378B / IN9378W	(1) 9-pin D Gender Changer - Male	(1) 9-pin D Male	(1) 9-pin D Male	Single
IN9381B / IN9381W	(1) BNC Barrel	(1) BNC Female	(1) BNC Female	Single
IN9382B / IN9382W	(1) F-Connector Barrel	(1) F-Connector Female	(1) F-Connector Female	Single
IN9383B / IN9383W	(1) RCA Barrel	(1) RCA Female	(1) RCA Female	Single
IN9384B / IN9384W	(1) ¼" Stereo Phono	(1) ¼" Stereo Phono Female	(3) Solder Lug Terminals	Single
IN9385B / IN9385W	(1) 3.5mm Mini Stereo	(1) 3.5mm Mini Stereo Female	(3) Solder Lug Terminals	Single
IN9386B / IN9386W	(1) BNC Barrel & (1) 3.5mm Mini Stereo	BNC Female	BNC Female	Single
		3.5mm Mini Stereo	(3) Solder Lug Terminals	
IN9387B / IN9387W	(1) S-Video & (1) 3.5mm Mini Stereo	4-pin Mini DIN Female	4 Bare Wires	Single
		3.5mm Mini Stereo	(3) Solder Lug Terminals	
IN9388B / IN9388W	(1) RCA for Video & (1) 3.5mm Mini Stereo	Yellow RCA Female	(2) Solder Lug Terminals	Single
IN9389B / IN9389W	(1) 6-PIN Mini DIN Barrel (PS/2 Keyboard / Mouse)	(1) 6-pin Mini DIN Female	(1) 6-pin Mini DIN Female	Single
IN9394DB / IN9394DW	(1) 4-pin XLR	Switchcraft 4-pin XLR Female	(4) Solder Cups	Double
IN9395DB / IN9395DW	(1) 3-pin XLR	Switchcraft 3-pin XLR Female	(3) Solder Cups	Double
IN9396DB / IN9396DW	(1) 6-pin XLR	Switchcraft 6-pin XLR Female	(6) Solder Cups	Double

Note: When ordering the IN2112R, please specify the necessary A/V connector modules.

Specifications

Input	
Connector Type	(2) 15-pin HD male - standard VGA pin-outs
RGB Video Signals	Analog, 1.5 Vp-p max.
Input Impedance	75 ohm
Sync Signals	TTL compatible
Horizontal Scan Rate	30 KHz - 130 KHz
Vertical Sync Range	30 Hz - 120 Hz
Stereo Audio Connector	(2) 3.5mm stereo mini female - Impedance: 10 Kohm
Output	
Local Monitor (Buffered)	(2) 15-pin HD female - standard VGA pin-outs
Main Output	(5) female BNC connectors
Output Signal Formats	RGBHV - Negative sync polarities (default) RGBHV - Mirror input sync polarities, RGBS or RGsB
RGB Signals	Analog Video, 75 ohm impedance
Bandwidth	400 MHz @ -3 dB with .7 volt input signal
Rise and Fall Times	0.875 nano seconds
Gain	1.0 +/- 5% (unity)
Sync Signal	H, V and S: 4V Unterminated; 2V when 75 ohm terminated Gs: 0.3V when 75 ohm terminated
Horizontal Pulse Width	Horizontal Position Enabled: Approximately 1.5 usec Horizontal Position Deleted: Approximately the same as the input signal
Vertical Pulse Width	Approximately the same as the input signal
Local Audio Outputs	(2) 3.5mm stereo mini female for Unbalanced Audio
Stereo Audio Output (Passive)	5-pin mini Phoenix captive screw terminal for balanced or unbalanced audio; Impedance: 50 ohm
Controls	
External	Horizontal Position Control Input Selector
Internal	10 Dip Switches Audio Output Unbalanced / Balanced (4 jumpers)
Dimensions	
Size (including faceplate)	3.5” H x 19” W x 5.5” D / 8.9cm x 48.3cm x 14.0cm
Shipping Weight	6 lbs. / 3 kg.
Power	
Power Supply	Internal Universal: 90 - 240VAC; 47 - 63Hz
Front Panel A/C Outlets	600 Watts Total **IN2112R:** (2) Edison female **IN2112R-IEC:** (2) IEC female **IN2112R-EU:** (2) Euro female
Regulatory Compliance	
Safety	UL 1950, CAN/CSA-22.2 No. 950 3rd Ed.
EMI	FCC class A; CE: EN50022 (1987), EN50081-1 (1991), EN50082-1 (1992 & 1994), EN60950-92

Parts Included

(1) IN2112R Rack Mountable Interface
(1) IN9334 3/32 Allen Wrench for **IN2112R** Connector Module Set Screws
(1) IEC Power Cable
(1) Operation Manuel

Required Accessories (Ordered Separately)

Input and Local Monitor Adapter and Extension Cables:
VGA: IN8000 Series 15-pin HD male to 15-pin HD female, various lengths from 3' to 100'
For Other Computers: See list on page 4

Optional Accessories

Power Equipment:
IN9210: Rack mountable power supply, powers up to 10 units

Remote Equipment:
IN9465: Rocker Switch Module

Audio Input Cables:
IN9106: 3.5mm stereo mini male to 3.5mm stereo mini male, 6' long
IN9107: (1) 3.5mm stereo mini male to (2) RCA male, 6' long

Installation Cables:
IN7000P-5 Series RGBHV Cable: Standard Resolution, Plenum Cable available in bulk lengths
IN7000P-5K Series RGBHV Cable: Standard Resolution, Plenum Cable available in 1000' bulk length
IN8800: 18 Conductor Super High-Resolution Cable: (3) Super High-Res. Coax., (3) Mini Coax., (5) 26 Gauge Twisted Pairs, (1) Gauge Pair

Connectors and Tools:
IN9301 BNC Connectors
IN9320 Crimp Tool Frame
IN9321 Die (**IN9320** and **IN9321** are used to terminate bulk cables)

RGB OUTPUT CABLES

Cables	3-Conductor	4-Conductor	5-Conductor	6-Conductor
Standard Resolution		**IN7000-4**	**IN7000-5**	
Standard Resolution, Plenum		**IN7000FP-4**	**IN7000FP-5**	
Ultra High Resolution	**IN7200-3**	**IN7200-4**	**IN7200-5**	**IN7200-6**
Super High Resolution			**IN7300-5**	**IN7300-6**
Super High Resolution, Plenum			**IN7300P-5**	

All cable grades are available in lengths from 3' to 250' pre-terminated with high quality BNC connectors or as bulk cable.

Troubleshooting

The display device connected to the IN2112R output has a bad / scrambled image.

Solution 1: Verify that the correct input cable is being used (see list on page 5).

Solution 2: The display device connected to the output of the interface may not be compatible with the computer output. Standard 640 x 480 VGA runs at 31.5 KHz, and SVGA can be as high as 48 - 58 KHz, depending on the vertical refresh rate. PC, MAC, SUN and other high-resolution workstations have new and ultra high-resolution modes such as 1600 x 1200 and 1800 x 1440, and can output a video signal with a horizontal scan rate of over 100 KHz! Many data monitors and data projectors are not compatible with these resolutions and frequencies.

Solution 3: Check the dipswitch settings to make sure the unit is putting out a sync format that the display device can use. For most applications, the default dipswitch settings (see page 11) will work best. For LCD / DMD / ILA / D-ILA / Plasma Display devices, you may have to disable the horizontal position control.

Solution 4: The RGBS or RGBHV cable may have a bad sync line. Try running the sync through another cable.

Solution 5: The **IN2112R** output sync range may not be compatible with the display device. Check the resolution and refresh rate for both the computer graphics card and the data display device to ensure compatibility.

The output image is very dark.

Solution: The horizontal position control may be set off to an extreme setting or may be interacting poorly with the horizontal position control on the display device. Follow the horizontal position adjustment procedure on page 9.

The local monitor looks fine but the image on the LCD projector is wavy or has vertical bars in the picture.

Solution 1: LCD / DMD / ILA / D-ILA / Plasma Display devices work best when the sync signal has minimum sync processing. Set the interface dipswitches as indicated in the section **OPTIMAL SETTINGS FOR LCD / DMD / ILA / D-ILA / PLASMA DISPLAY DEVICES** on page 8. Setting the interface to RGBHV output and disabling the horizontal position control may alleviate this problem.

Solution 2: LCD / DMD displays often have an adjustment called Phase Adjust or Fine Phase Control. This control should be adjusted to provide the best image.

The output image is missing a color.

Solution: Possibly the RGBS or RGBHV cable is bad. Try switching connections on the output to verify that the bad color's cable is OK (***Example:*** If there is no red, try running the green output through the red cable and see if the green is displayed or not).

The output image is too green.

Solution: The dipswitch settings may be set for sync on green output and the display device doesn't like that format. Try changing the dipswitches to output an RGBS or RGBHV signal (see **Dipswitch Settings** on page 11).

The horizontal position control is not working.

Solution 1: Check the dipswitch settings to see if the horizontal position control has been disabled.

Solution 2: The input setting may be RGsB (sync on green). The horizontal position control does not work with RGsB input signals.

The output image is doubled, with two images displayed side-by-side.

Solution: The display device may not be compatible with the horizontal scan rate of the computer. This problem often occurs when a 31.5 KHz VGA signal is sent into an RGB monitor that is only compatible with signals at 15.75 KHz.

If problems persist, call INLINE Technical Services at (800) 882-7117 for further assistance.

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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