



A WORLD OF A/V SOLUTIONS



INTERFACES

### CIA100 COMPUTER INTERFACE



# CIA100

OPERATION MANUAL



## 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 ausgetauscht 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.**



### 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.

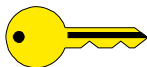
## Product Overview

### DESCRIPTION

The **CIA100** is a high-performance computer video interface for analog video signals including VGA, SVGA, XGA, SXGA, UXGA, MAC, SUN and other high-resolution workstations. The **CIA100**'s compact design allows users to place it in a variety of locations or permanently mount it to virtually any flat surface (using the optional **IN9250** mounting brackets). Like other **INLINE** interfaces, the **CIA100** 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 **CIA100** simplifies interfacing tasks by acting as a universal adapter. Through the use of removable input cables, the **CIA100** 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), RGSB or RGSB formats.

#### KEY CONCEPT



*The **CIA100** is not a scan converter. The data projector, monitor or other output device must be compatible with the horizontal scan rate, vertical scan rate and resolution output by the computer video card.*

### PRODUCT FEATURES

- **15-Pin HD Female Connectors** - The **CIA100** connects directly to VGA graphics cards and VGA local monitors via high-resolution coaxial VGA extension cables.
- **Ultra High-Resolution Amplification** - The **CIA100** provides superb performance with analog video signals at any resolution.
- **Selectable Output Sync Format** - The unit can be set for RGBHV (default), RGSB or RGSB output sync as required by the data display device and signal distribution system.
- **Buffered Local Monitor Output** - ensures the highest quality display on a local monitor.
- **One-Button Monitor Emulation** - makes it easy to use the interface without a local monitor.
- **New Soft-Touch Rocker Button for Horizontal Position Control** - allows precise centering of the image within the data display area.
- **400 MHz Bandwidth**

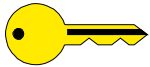
## Compatibility

### INPUT

The **CIA100** will accept high-resolution video signals from virtually any computer that outputs an analog video signal. The unit will work with signals at virtually any resolution and refresh rate. Compatible computer video signals include VGA, SVGA, XGA, SXGA, UXGA, MAC, SUN, SGI and other high-resolution computers outputting an analog video signal. Input signal compatibility parameters are listed below.

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

#### KEY CONCEPT

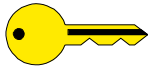


*\* The **CIA100** will operate with RGsB input signals. However, the unit will not strip sync off of the green. RGsB input signals are always output as RGsB (they cannot be output as RGBS or RGBHV). Also, the horizontal position control will not operate when used with RGsB input signals.*

### OUTPUT

The output signal of the **CIA100** 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.*

## Installation

This section offers step-by-step instructions for installing the **CIA100**. An Application Diagram is provided on page 5, and Front and Rear Panel Connector and Control Diagrams are on page 6.

*Note: Read the instructions carefully before initiating the installation procedure. Before you begin, make sure that there is no power connected to any components in the display system, and that **all** the power buttons are off.*

- 1.) Place / install the **CIA100** at the desired location, making sure that the unit is seated on a flat surface. The unit can be mounted to virtually any flat surface using the optional **IN9250 L** Mounting Brackets that attach to the sides of the unit. Run the video coax cable to the interface.

*Note: The optional **IN9251 Flush Mount Brackets** are available for mounting the **CIA100** through a hole in the tabletop.*

- 2.) Set the dipswitches as appropriate for your installation (see page 7 for more details). The **CIA100** factory default output format is RGBHV. If your display device, routing system, or cabling require a different format, use the dipswitches to change the output signal to RGBS or RGB as necessary. For best results with high-resolution data projectors / presentation monitors, refer to the OPTIMAL SETTINGS FOR LCD / DMD / ILA / D-ILA / PLASMA DISPLAYS Section on page 8.

- 3.) Turn the computer and computer monitor off. Disconnect the monitor from the video output port on the computer.

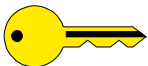
- 4.) Connect the **CIA100** video output (5 BNC connectors) to the data display device's RGB input, using three, four, or five high-resolution BNC cables or a multi-conductor RGBHV, RGBS, or RGB "snake". The **IN7000 Series**, **IN7200 Series**, **IN7300 Series** and **IN7400P Series** high-resolution cables are well suited for this purpose. Take care while making connections to ensure that the red output is connected to the red input, green output to the green input, etc..

- 5.) Connect the computer graphics card to the **CIA100** 15-pin video input port.

- **PC / MAC / SGI Computers with 15-pin HD Video Ports** - can be connected via **IN8000M-1 / IN8200M-1 Series** high-resolution coaxial VGA cables.
- **Older Macintosh (15-pin D) / SUN (13W3) / Workstations (4 or 5 BNC)** - can be connected using the appropriate input / output cables listed in the chart on the following page.

- 6.) Connect the local computer monitor (if applicable) to the local monitor output port of the **CIA100**. Monitors with 15-pin VGA connectors will attach directly to the interface. For other types of monitors, refer to the table on the next page.

### KEY CONCEPT



*If a local monitor is required, disengage the monitor emulation feature by pressing the Monitor Emulation Button. See page 8 for more details.*

- 7.) Apply power to the **CIA100** using the **IN9205** 9 VDC; 1.0A power supply (included). The power LED on the front of the unit will illuminate.
- 8.) Complete the installation by turning the computer and computer monitor on. If required, adjust the horizontal position control to center the image on the data display device (see the **Horizontal Position Control** Section on page 7 for more details).

## ADAPTER / EXTENSION CABLES FOR INPUT AND LOCAL MONITOR OUTPUT

The **CIA100** has 15-pin HD VGA-type input and local monitor output connector ports. The following cables / adapters are available:

Computer	3'	6'	12'	25'	35' +
<b>VGA: 15-Pin HD</b>					
Input Cable (M-M)	<b>IN8003M-1</b>	<b>IN8006M-1</b>	<b>IN8012M-1</b>	<b>IN8025M-1</b>	<b>IN80xxM-1</b>
Output Cable (M-F)		<b>IN8006-1</b>	<b>IN8012-1</b>	<b>IN8025-1</b>	<b>IN80xx-1</b>
<b>MAC with 15-Pin D:</b>					
Input Cable (M-M)		<b>IN9140M</b>		<b>IN9144M</b>	
Output Cable (M-F)	<b>IN9141</b>			<b>IN9145</b>	
<b>MAC G3, G4 and PowerBook with 15-Pin HD*:</b>					
Input Cable (M-M)		<b>IN8006M-1</b>	<b>IN8012M-1</b>	<b>IN8025M-1</b>	<b>IN80xxM-1</b>
Output Cable (M-F)		<b>IN8006-1</b>	<b>IN8012-1</b>	<b>IN8025-1</b>	<b>IN80xx-1</b>
<b>SUN: 13W3 (may also be used with SGI with RGsB output)</b>					
Input Cable (M-M)		<b>IN9142M</b>		<b>IN9146M</b>	
Output Cable (M-F)	<b>IN9143</b>			<b>IN9147</b>	
<b>Workstation: 5 BNC / RGBHV</b>					
Input Cable (M-M)		<b>IN9045-L6</b>	<b>IN9045-L12</b>	<b>IN9045-L25</b>	<b>IN9045-Lxx</b>
Output Cable (M-M)		<b>IN9045-L6</b>	<b>IN9045-L12</b>	<b>IN9045-L25</b>	<b>IN9045-Lxx</b>
<b>Workstation: 4 BNC / RGSB</b>					
Input Cable (M-F)		<b>IN9100</b>			

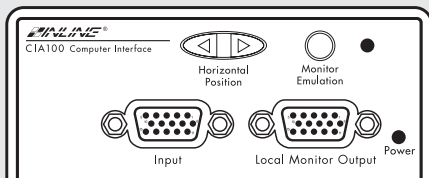
\*Newer Mac G3 models (with translucent cases) have 15-Pin HD connectors (pins arranged in 3 rows). Older G3 models (with solid white enclosures) incorporate 15-Pin D connectors (pins arranged in 2 rows).

# CIA100 COMPUTER INTERFACE

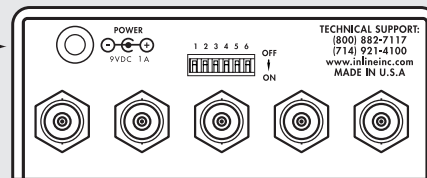
# APPLICATION DIAGRAM

— = Video  
- - - = Power

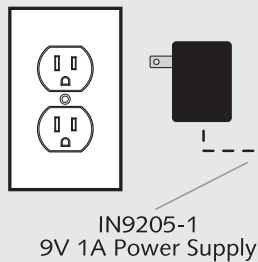
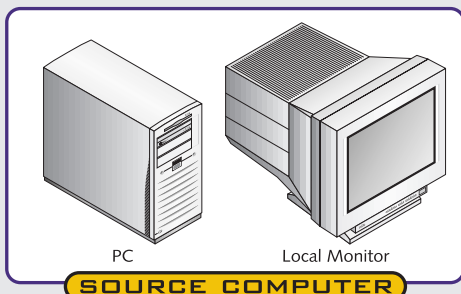
CIA100 Interface — Front



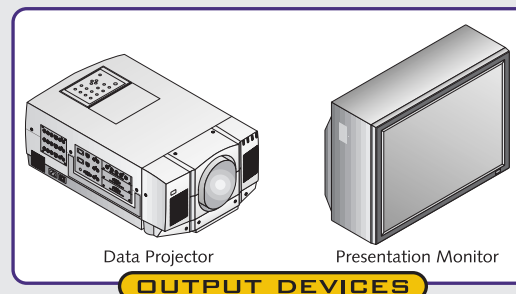
CIA100 Interface — Back



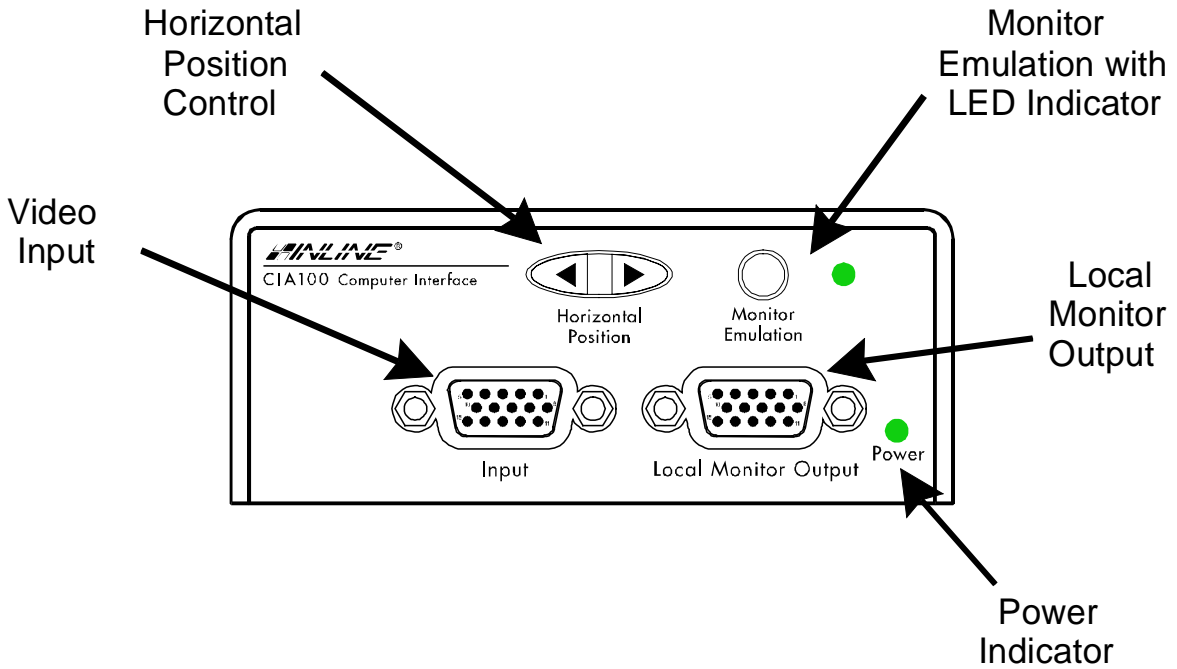
IN8000  
VGA Cable



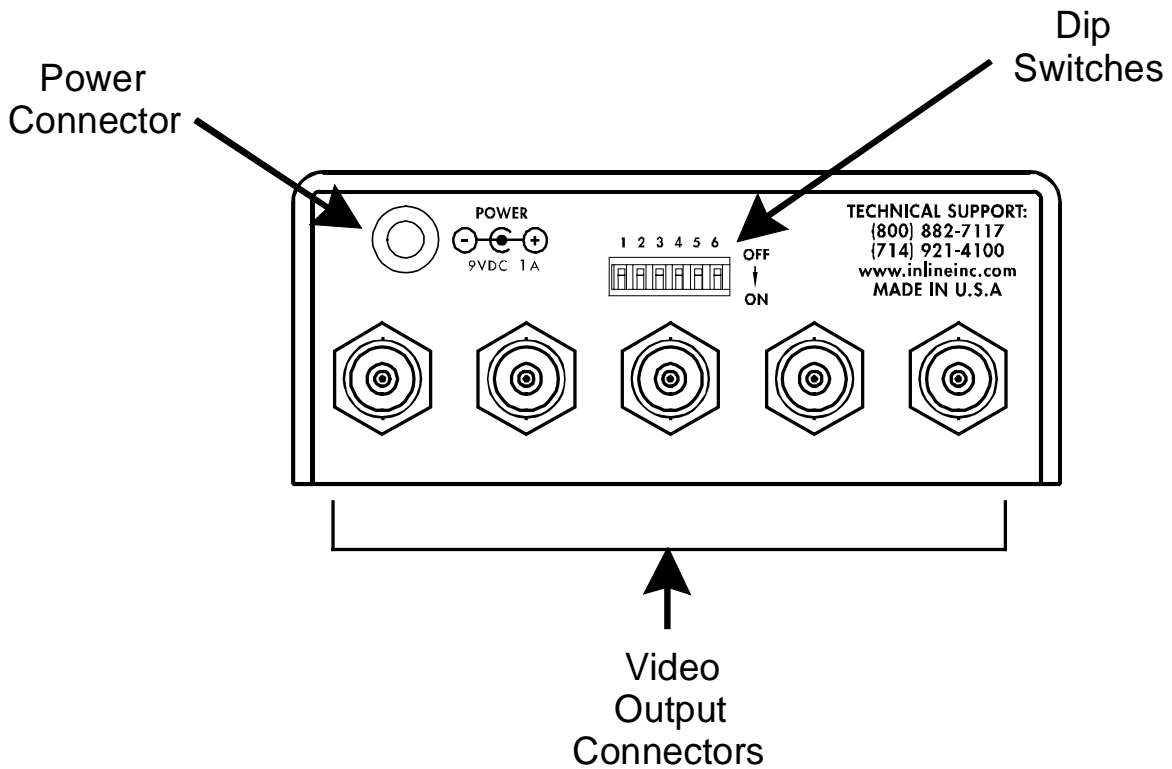
IN7000-5 /  
IN7200-5 / IN7300-5  
Coaxial Cable



### CIA100 FRONT PANEL CONNECTORS AND CONTROLS



### CIA100 REAR PANEL CONNECTORS AND CONTROLS



## HORIZONTAL POSITION CONTROL

The location of the horizontal position control is shown in the Front Panel Connectors and Controls Diagram on the previous page. Press and release the rocker button to shift the image by one step to the left or right. Press and hold the button to shift the image continuously.

*Note: The horizontal position control has no effect on the local computer monitor.*

If the horizontal position adjustment is set to an extreme position on either the display device or the **CIA100**, the output image may appear dark and / or the colors may be displayed improperly. To position the video image and achieve optimum picture quality:

1. Set the display device's horizontal position control to the center of its adjustment range.
2. Adjust the horizontal position control on the **CIA100** until the picture is centered properly on the display device.

*Note: The horizontal position control does not work with RGB input signals.*

## DIPSWITCH SETTINGS

Most installations will not require any changes to the dipswitch settings. The factory default and specialized dipswitch settings are indicated below.

### Factory Default Settings:

<b>Dipswitches ON:</b>	1, 3 & 4
<b>Horizontal Position Control:</b>	Enabled
<b>Signal Format:</b>	RGBHV
<b>Monitor Emulation at Power Up:</b>	Enabled

The following table lists the functions of the 6 dipswitches:

DIPSWITCH	FUNCTION	SETTING
1	Horizontal Position Control	On = Enabled* Off = Disabled
2	Output Sync Format (sync on green)	On = RGsB Off = RGSB / RGBHV*
3	Output Sync Format (RGSB or RGBHV)	On = RGBHV* Off = RGSB
4	Monitor Emulation at power up	On = Enabled* Off = Disabled
5	Reserved	
6	Reserved	

\* Factory Default Setting

## MONITOR EMULATION

The factory default setting for the **CIA100** is Monitor Emulation Enabled. **If the application requires a local monitor**, make sure that the front panel Monitor Emulation LED is OFF (press the MONITOR EMULATION Button to toggle between enabled / disabled). **If no local monitor is necessary**, make sure the Monitor Emulation LED is ON.

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

**Output Sync Format** - All **CIA100 Series** Interfaces feature advanced sync processing circuitry that offers superb compatibility with a wide range of display devices. The **CIA100** has been designed (and extensively tested) to provide excellent operation when set for RGBHV, RGBS and RGsB output signal formats. However, some display devices most readily identify and display VGA-type signals when they are in the RGBHV signal format. For this reason, users may achieve optimal compatibility and more consistent results when the interface is set to the factory default output sync format of RGBHV (see **Dipswitch Settings** on page 7).

**Horizontal Position Control** - The **CIA100** horizontal position control utilizes a new circuit design that provides excellent image quality and greatly enhanced compatibility with a variety of data display technologies. However, in rare cases, instability in parts of the displayed image may still occur (depending on the design of the display device's sync circuitry). Adjusting the data display's fine phase or auto phase adjustment will usually alleviate the problem. If problems persist, users may wish to disable the **CIA100** horizontal position control (see page 7).

## Specifications

CIA100 Computer Interface	
<b>Input</b>	
Connector Type	(1) 15-pin HD female - 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
<b>Output</b>	
Local Monitor (Buffered)	15-pin HD female - standard VGA pin-outs
Main Output	(5) female BNC connectors
Output Signal Formats	RGBHV, RGSB or RGSB
RGB Signals	Analog Video, 75 ohm impedance
Bandwidth	400 MHz @ -3 dB with 0.7 Vp-p input signal
<b>Dimensions</b>	
Size (including faceplate)	1.65" H x 4.1" W x 4.3" D / 4.2 cm x 10.3 cm x 11 cm
Product Weight	0.7 lbs. / 0.32 kg.
Shipping Weight	2.4 lbs. / 1.1 kg.
<b>Power</b>	
Power Supply	9 VDC, 1A Power Supply (included)
<b>Regulatory Compliance</b>	
Safety	UL 1950, CAN/CSA-22.2 No. 950 3 <sup>rd</sup> Ed.
EMI	FCC class A; CE: EN50022 (1987), EN50081-1 (1991), EN50082-1 (1992 & 1994), EN60950-92

Parts Included
<p>(1) CIA100 Interface</p> <p>(1) IN9205 External Power Supply: 9 VDC; 1.0A</p> <p>(1) IN9339 Adjustment Tool with Technician's Blade</p> <p>(1) Operation Manual</p>

Required Accessories (Ordered Separately)
<p><b>Input and Local Monitor Adapter and Extension Cables:</b></p> <p><b>VGA:</b> IN8000 Series 15-pin HD male to 15-pin HD female, various lengths from 3' to 100'</p> <p><b>For Other Computers:</b> Refer to the table on page 4</p>

Optional Accessories
<p><b>Power Accessories:</b></p> <p><b>IN9210:</b> Rack Mountable Power Supply (powers up to ten 9VDC / 12VDC devices)</p>
<p><b>Mounting Hardware:</b></p> <p><b>IN9250:</b> L Mounting Brackets - For Mounting CIA100 to Flat Surface</p> <p><b>IN9251:</b> Flush Mount Brackets - For Mounting CIA100 Through Hole in Table Top</p>

RGB Installation Cables			
Coaxial Cables	3-Conductor	4-Conductor	5-Conductor
Standard Resolution		IN7000-4	IN7000-5
Standard Resolution, Plenum		IN7000P-4	IN7000P-5
Super High Resolution	IN7300-3	IN7300-4	IN7300-5
Super High Resolution, Plenum			IN7400P-5
Ultra High Resolution	IN7200-3	IN7200-5	IN7200-6

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

## Troubleshooting

**Problem: The display device connected to the CIA100 output has a bad / scrambled image.**

- **Solution 1:** Verify that the correct input cable is being used (see table on page 4).
- **Solution 2:** The display device connected to the output of the interface may not be compatible with the computer output. 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 will work best (see page 7). For LCD / DMD / 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.

**Problem: The power LED is on but there is no image on the display device.**

- **Solution:** Check the RGBHV cable connections at the interface output and at the display device input to make sure that the vertical and horizontal sync wires are not reversed.

**Problem: The output image is very dark.**

- **Solution:** The CIA100 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 7.

**Problem: The local monitor looks fine but the image on the Data Projector / Data Display is wavy or has vertical bars in the picture.**

- **Solution 1:** Set the interface to RGBHV output.
- **Solution 2:** Disable the horizontal position control.
- **Solution 3:** LCD / DMD displays often have an adjustment called Phase Adjust or Fine Phase Control. This control should be adjusted to provide the best image.

**Problem: The output image is missing a color.**

- **Solution:** Possibly the RGSB 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).

**Problem: 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 RGSB or RGBHV signal.

**Problem: 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 signal may be RGSB (sync on green). The horizontal position control does not work with RGSB input signals.

**Problem: 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 (714) 921-4100 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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