

OPERATION MANUAL



IN1776 VGA / MAC to Video Scan Converter



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PRODUCT OVERVIEW

DESCRIPTION

The IN1776 is a full-featured scan converter which transforms VGA, SVGA, XGA or MAC II type signals into standard NTSC or PAL video which may then be displayed on a regular video monitor or recorded to videotape. Whether you are making a sales presentation on the road, holding a software training session, or demonstrating a new site on the Internet, you need powerful tools to grab attention and keep your audience with you. Working in conjunction with your computer, the IN1776 lets you display images generated by a PC or MAC on a wide variety of conventional video equipment.

PRODUCT FEATURES

- **Wide Input Signal Compatibility** - The IN1776 accepts VGA and MAC signals at resolutions from 512 x 385 up to 800 x 600 and vertical refresh rates up to 80 Hz.
- **Infrared Remote Control** - allows presenters to move freely around the room. The remote control makes it easy to adjust picture width, position, underscan, freeze, flicker filter, zoom, pan and all other controls up to 50' away from the unit. The infrared control port also allows for complete system integration since the IN1776 may be rack mounted and controlled by a third-party control system.
- **Three Position Flicker Filter** - An advanced design lets users select the best flicker / sharpness setting for each type of display material while maintaining a flicker-free image.
- **Zoom and Pan** - Users may zoom in to display an enlarged view of detailed drawings or fine text, press the pan controls to pan smoothly around the picture, then press zoom again to see the entire screen.
- **Local Monitor Output** - provides a buffered signal for the local computer monitor (no termination required if used without a local monitor). This allows you to view the original high resolution signal on your computer monitor while simultaneously viewing scan converted video on conventional video monitors or projectors.
- **Flexible Output Formats** - Featuring Composite Video, S-Video, and RGBS outputs, the IN1776 Scan Converter connects easily to a wide variety of consumer, industrial, and professional video equipment. All outputs are live at the same time, so by connecting to the Composite, S-Video and RGBS outputs the IN1776 may actually drive up to three video displays simultaneously (in addition to the local computer monitor).

INPUT COMPATIBILITY

The IN1776 will work with video signals from PC compatible computers and the Macintosh family of computers as follows:

VGA / SVGA / XGA

Resolutions: 640 x 400
 640 x 480
 800 x 600
 Vertical Refresh Rate: 50 to 80 Hz

MAC II / Quadra / Centris / Performa / Power Book / Power MAC

Resolutions: 512 x 384 (12" Color Monitor)
 640 x 480 (13"/14" Color Monitor or Multiple Scan)
 Vertical Refresh Rate: 50 to 80 Hz

Other Signals

The IN1776 automatically senses the characteristics of the input signal and adjusts itself accordingly. This allows it to work with non-standard signals which fall within its operating range. For instance, while standard VGA signals are 640 x 480 resolution / 60 Hz / 31.5 KHz in the RGBHV format, the IN1776 will also accept a 640 x 480 / 60 Hz / 31.5 KHz signal in the RGSB format. **The main limiting factor for compatibility is not the horizontal or vertical scan rates or sync format, but the video resolution which must not exceed 800 x 600.**

Using an optional input adapter, the IN1776 may also accept signals other than the VGA and MAC standards listed above as long as they fall within the following operating parameters:

Resolution: 512 x 384, 640 x 400, 640 x 480, 800 x 600
 Horizontal Scan Rate: 24 KHz - 54 KHz
 Vertical Refresh Rate: Up to 80 Hz
 RGB Video Signals: Analog Video, 0.7 Vp-p
 Sync Signals: Composite Sync or Separate (H & V) Sync

OUTPUT COMPATIBILITY

The IN1776 output signal may be connected to many types of video equipment including TV monitors, presentation monitors, video projectors, VCRs, and teleconferencing equipment. Video output is offered in three formats:

Composite Video - Offers widest compatibility with consumer video equipment such as TV monitors, VCRs and other equipment with a composite video input.

S-Video - Also known as Y/C, this output provides a clearer signal than the composite video output and should be used whenever possible. S-Video may be connected to any video equipment having an S-Video input such as video monitors, large screen monitors, video projectors, S-VHS VCRs and Hi-8 VCRs.

RGBS - This output provides the best clarity and color accuracy and should be used if your display equipment has an RGBS input. Frequently used with industrial and professional grade RGB monitors, retro-projectors and video projectors.

INSTALLATION - PC COMPATIBLE COMPUTERS

Installation steps for PC computers are listed below and outlined in the diagram on the next page. For Macintosh computer installations, see pages 6 & 7.

#1 Connect the computer's VGA video port to the IN1776 Input.

- Disconnect the local computer monitor from the computer's video port.
 - Using the IN8006 cable supplied with the unit, connect the computer's VGA video port to the IN1776 **VGA / MAC INPUT** port. The computer's VGA port is a 15-pin HD female connector located on the rear of the computer which looks like this:



#2 Connect the local computer monitor to the IN1776.

Attach the VGA monitor cable to the **LOCAL MONITOR OUTPUT** port on the IN1776.

If you are using a laptop computer or do not wish to have a local monitor you may leave the IN1776 LOCAL MONITOR OUTPUT port open - no termination plug is required.

#3 Connect the IN1776 VIDEO, S-VIDEO, or RGBS output to your display device or VCR.

Composite Video - Select either the RCA connector or the BNC connector on the IN1776. *You may not connect displays to both the RCA and BNC connector simultaneously.*

RCA Connector - connect the IN1776 **VIDEO** output to the Video input on the video monitor or VCR using the IN9095 RCA to RCA 6' video cable (provided).

BNC Connector - connect the IN1776 **VIDEO** output to the Video input on the video monitor or VCR using a BNC male to BNC male 75 ohm coaxial cable. The IN7200-1 Series cables, available in a variety of lengths, are well suited for this purpose.

S-Video - Connect the IN1776 **S-VIDEO** output to the S-Video input on the video monitor or VCR using the IN9096 S-Video 6' cable (provided).

RGBS - Connect the IN1776 **RGBS** output to the RGBS input on the RGB monitor or video projector using a 4-BNC coaxial cable with male connectors at each end. The IN7000-4, IN7100-4 and IN7200-4 cables, available in a variety of lengths, are well suited for this purpose.

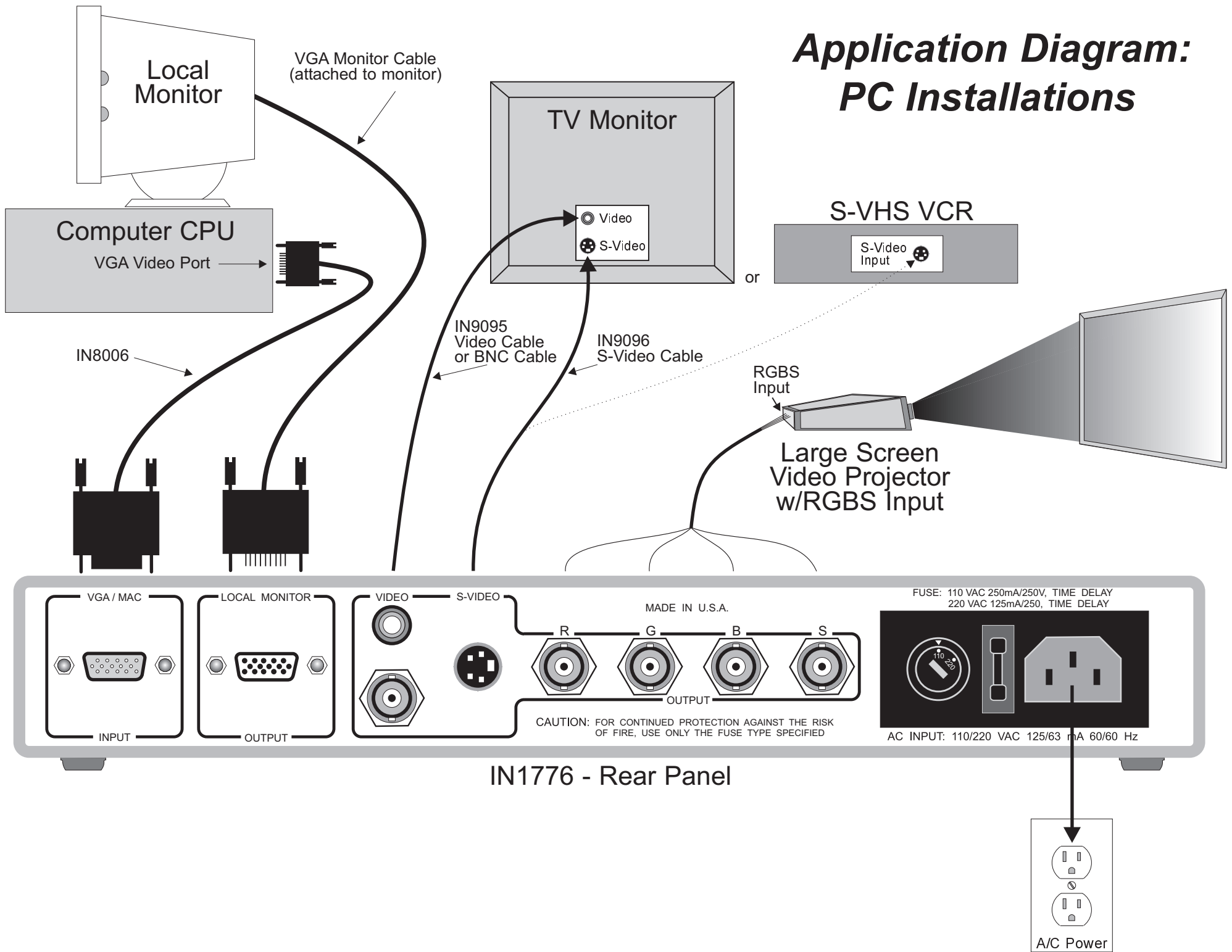
#4 Check the power selector switch and connect the A/C power source.

- Check to see that the 110 / 220 switch on the back of the unit matches the local A/C line level. This switch can be changed if necessary by using a small straight slot screw driver.
 - Connect the IN1776 power entry module to an A/C power source with the power cord provided (US versions only). For countries with A/C wall plugs other than Edison-style, use a standard computer-type power cord with a female IEC connector on one end and the appropriate male A/C power connector on the other end.

#5 Load batteries into the Infrared Remote control.

The IR remote control requires (4) AAA batteries (included with the unit). Place these in the battery holder in the back of the remote control as indicated on the drawing inside the remote.

Application Diagram: PC Installations



INSTALLATION - MACINTOSH COMPUTERS

Installation steps for Macintosh computers are listed below and outlined in the diagram on the next page. For PC computer installations, see pages 4 & 5.

#1 Connect the computer's video port to the IN1776 Input.

- Disconnect the local computer monitor (if present) from the computer's video port.
 - Connect the computer's video port to the IN1776 **VGA / MAC INPUT** port using the IN9097 MAC Input Adapter cable supplied with the unit. The computer's video port is a 15-pin D female connector located on the rear of the computer which looks like this:



- If you are working with a PowerBook computer the video port looks different. Apple supplies a cable to convert this unique port to the standard 15-Pin D female connector as shown above. You must first attach the Apple video adapter to the PowerBook. Then connect the IN9097 adapter cable to the end of the Apple video adapter.

#2 Connect the local computer monitor to the IN1776.

Attach the MAC monitor cable to the **LOCAL MONITOR OUTPUT** port on the IN1776 using the IN9099 MAC Output Adapter cable supplied with the unit.

#3 Connect the IN1776 VIDEO, S-VIDEO, or RGBS output to your display device or VCR.

Composite Video - Select either the RCA connector or the BNC connector on the IN1776. *You may not connect displays to both the RCA and BNC connector simultaneously.*

RCA Connector - connect the IN1776 **VIDEO** output to the Video input on the video monitor or VCR using the IN9095 RCA to RCA 6' video cable (provided).

BNC Connector - connect the IN1776 **VIDEO** output to the Video input on the video monitor or VCR using a BNC male to BNC male 75 ohm coaxial cable. The IN7200-1 Series cables, available in a variety of lengths, are well suited for this purpose.

S-Video - Connect the IN1776 **S-VIDEO** output to the S-Video input on the video monitor or VCR using the IN9096 S-Video 6' cable (provided).

RGBS - Connect the IN1776 **RGBS** output to the RGBS input on the RGB monitor or video projector using a 4-BNC coaxial cable with male connectors at each end. The IN7000-4, IN7100-4 and IN7200-4 cables, available in a variety of lengths, are well suited for this purpose.

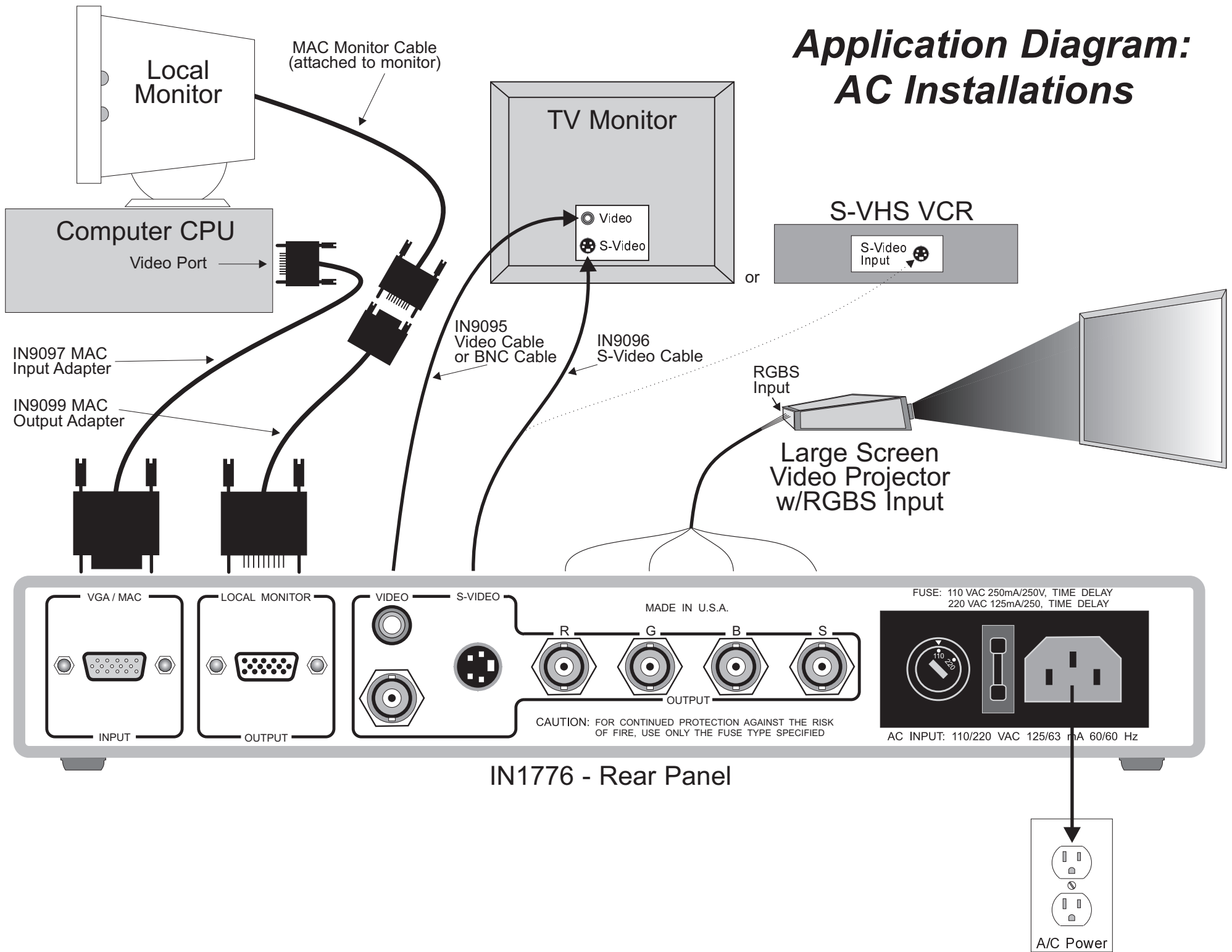
#4 Check the power selector switch and connect the A/C power source.

- Check to see that the 110 / 220 switch on the back of the unit matches the local A/C line level. This switch can be changed if necessary by using a small straight slot screw driver.
 - Connect the IN1776 power entry module to an A/C power source with the power cord provided (US versions only). For countries with A/C wall plugs other than Edison-style, use a standard computer-type power cord with a female IEC connector on one end and the appropriate male A/C power connector on the other end.

#5 Load batteries into the Infrared Remote control.

The IR remote control requires (4) AAA batteries (included with the unit). Place these in the battery holder in the back of the remote control as indicated on the drawing inside the remote.

Application Diagram: AC Installations



SPECIAL CONCERNS WHEN CONNECTING TO MACINTOSH COMPUTERS

Installing the IN1776 without a local computer monitor.

Most Macintosh-type computers need to see a certain signal applied to the video port at boot up in order to output a video signal and set the computer to the correct resolution.

13"/14" Color Monitor Emulation - The IN9097 input adapter cable emulates the 13"/14" mode (640 x 480 resolution) and no termination plug is required when using the unit without a local monitor.

12" Color Monitor Emulation - In order to emulate the 12" monitor mode (512 x 384) you must attach a 12" color monitor to the IN1776 **LOCAL MONITOR OUTPUT**. It is not possible to emulate the 12" mode without the monitor attached.

Working with Macintosh PowerBooks

Always turn off the PowerBook before connecting anything to the external video port.

Using the Macintosh PowerBook Video Adapter - PowerBooks use a different video connector than other Macintosh models. Apple provides a video adapter with the PowerBook which converts this unique connector to the standard 15-Pin D connector. You must first attach this to the PowerBook before connecting the IN9097 Input Cable.

PowerBook Models Without a Video Output - Some Macintosh PowerBook Models do not have a video output. You must purchase and install a third-party video output card in order to use these models with external video devices such as the IN1776 or an auxiliary computer monitor.

Video Mirroring - After connecting the PowerBook and powering it back up you may have no menu bar on the PowerBook's internal display. This may indicate that Video Mirroring is off and the display connected to the IN1776 is now acting as the primary monitor.

In order to display identical images on the PowerBook and the video display connected to the IN1776 you will want to turn Video Mirroring on. Under Control Panels double click on the PowerBook Display icon. A window will open with radio buttons which allow you to turn Video Mirroring on or off.

NTSC AND PAL VERSIONS OF THE IN1776

The IN1776 Scan Converter comes in two versions. Both units offer identical input compatibility and features and the only difference between the two versions is the output video signal format.

The NTSC version is sold in the United States, Canada, Mexico, Japan and other countries which use the NTSC video standard. This unit carries no special marking.

The PAL version is sold in the UK, Australia, Germany, Denmark and other countries using the PAL video standard. PAL versions of the IN1776 are marked on the rear panel with a sticker reading "**PAL Video.**"

OPERATING THE IN1776 SCAN CONVERTER

FRONT PANEL CONTROLS / INDICATORS

The IN1776 front panel has only one button (POWER) as virtually all picture adjustments are controlled by the infrared remote control. Indicator lights on the IN1776 front panel show the current status of the unit.

POWER Button / Power LED

The Power button turns the IN1776 on or off. Press lightly on the raised green button to activate the power button. The Power LED will light or go dark, indicating whether the IN1776 is on or off. The Power LED operates the same way whether the unit is turned on using the front panel POWER button or the IR remote **PWR** button.

FREEZE LED

The Freeze LED lights when freeze frame is on and goes off when the unit is in normal mode. If you press buttons on the IR remote control and nothing is happening, check to see if the FREEZE light is lit on the front panel.

OVERSCAN

The OVERSCAN LED lights when the unit is in overscan and goes off when the unit is in underscan.

USING THE INFRARED REMOTE CONTROL

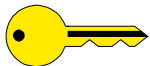
The IR remote included with the IN1776 controls all picture adjustments up to 50' away from the unit. For best remote operation you should be able to clearly see the front panel of the IN1776 when using the remote. The IR remote has dual transmitter LEDs which put out a very strong signal, so in situations where you do not have a clear shot to the front panel you may be able to bounce the IR control beam off the ceiling or walls to hit the REMOTE receiver on the IN1776. This method is not fool proof so it is always best to have a direct line of sight between the IR remote the front panel of the IN1776.

Selecting the Device to Control

While the IN1776 IR remote has the capability of controlling the IN1776 as well as other devices this manual only covers the use of the IR remote to control the IN1776. The six buttons at the top of the unit marked **CD**, **VCR**, **CBL**, **IN1776**, **AUX 2**, and **TV** determine which device the remote is currently operating. There are two ways to switch the remote to the IN1776 control mode:

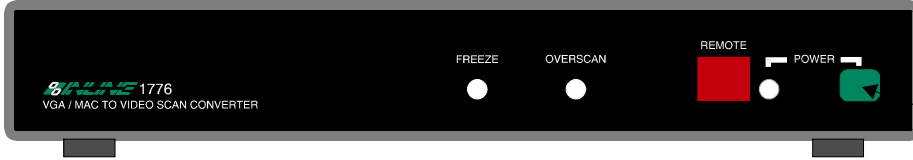
- #1 Press the **IN1776** button located near the top end of the remote. *or*
- #2 Press the **PWR** button. When the **PWR** button is pressed the remote carries out a macro which sets it to control the IN1776.

KEY CONCEPT



*If you are pressing buttons on the remote and nothing is happening it is likely that one of the other device selector buttons (**CD/VCR/CBL/AUX 2/TV**) has been hit. Just press **IN1776** and the remote will function normally to control the IN1776.*

IN1776 Controls



Press POWER to turn IN1776 power on or off.

Press IN1776 to use remote for IN1776 after controlling other devices (TV, VCR, etc.)

Press PWR to turn IN1776 power on or off.

Press ZOOM to display a 2X magnified view of the screen. Press ZOOM again to return to a normal view.

OVERSCAN toggles picture between overscan / underscan. Leave in overscan for best quality.

With ZOOM on, press PAN to enter the Pan mode. Now use the buttons to move around the screen. Press again for SHIFT.

FLICKER steps through the 3 flicker filter / sharpness settings.

Use the four arrow keys to shift the image up/down/left/right. Also used for Pan mode.

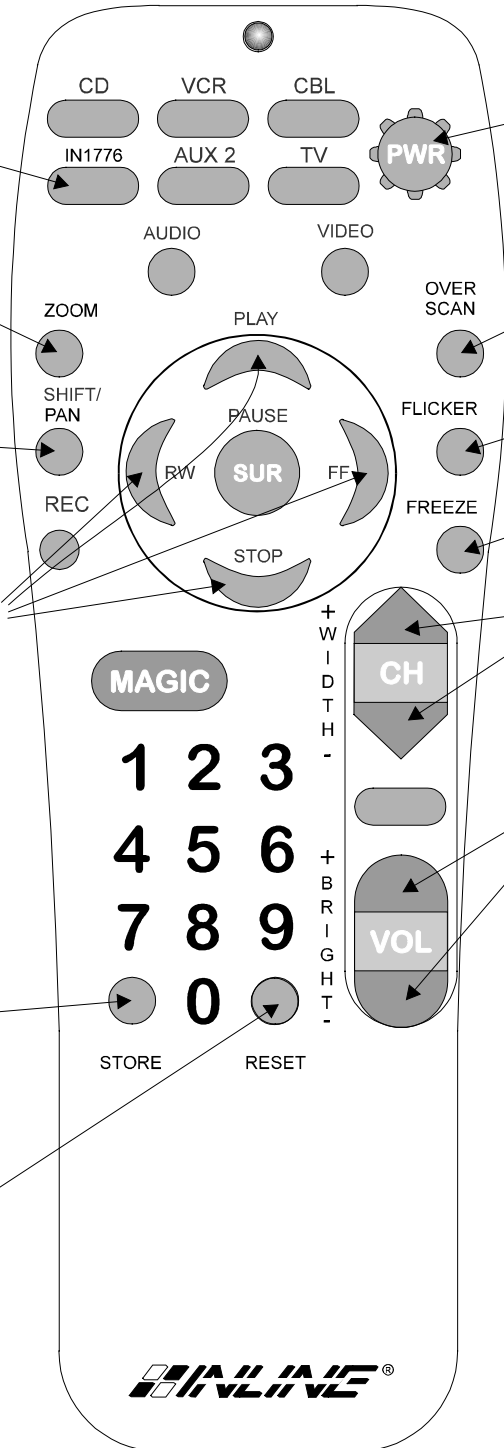
FREEZE engages or releases freeze frame.

Adjusts picture width. Press top for greater width, bottom for less.

Press STORE and all current settings will be stored in memory. Unit will recall these settings at power up.

Adjusts picture brightness. Press top for greater brightness, bottom for less.

Press RESET to set IN1776 back to factory default settings.



IN1776 CONTROL BUTTONS

All the IN1776 control buttons are color coded with green name labels next to them for quick identification. The only exceptions to this are the Power button and the four position buttons. The diagram on page 10 outlines the location and function of each button. Detailed descriptions for each button are included below and continued on pages 12 & 13.



PWR Button

This button toggles between power on or power off. For user convenience, the **PWR** button has been programmed with a macro which carries out the following functions:

- Sets the remote to control the IN1776
- Turns on the IN1776
- Sets the IN1776 to Overscan

ZOOM



ZOOM Button


When **ZOOM** is pressed the unit toggles between zoom mode and normal mode. With zoom engaged the IN1776 displays an enlarged view of part of the screen. This is ideal for viewing spreadsheets, small text or detailed drawings since anything on the screen is magnified to twice its normal size. While in the zoom mode you may press **PAN** and then use the arrow keys to move around to any other part of the screen. Press **ZOOM** again to return to a normal view of the entire image.

The IN1776 remembers the last zoom location so you may set this location ahead of time using the **PAN** and arrow keys. At the appropriate time in your presentation hit the **ZOOM** button and the unit will zoom in to that part of the screen you wish to emphasize.

PAN



SHIFT / PAN Button

When the **SHIFT / PAN** button is pressed, the function of the four arrow keys  toggles between **PANNING** and **SHIFTING**. The **PANNING** function is normally used in the **ZOOM** mode. After pressing **SHIFT / PAN**, press any of the arrow buttons to move around the screen. Press once to move a small amount, or press and hold one of the arrow buttons to move continuously.

The **SHIFTING** function is used to center the image on the display screen.

OVER
SCAN



OVERSCAN Button

This button toggles the IN1776 between overscan and underscan each time it is pressed.

When working with signals at 800 x 600 resolution the unit cycles through three steps: Overscan / Underscan / Maximum Underscan.

Overscan - the image fills the entire screen and some of the image may be lost off the edge (depends on the type of display device used). The overscan mode gives the best picture clarity and should be used whenever possible. The front panel OVERSCAN LED will light when in overscan mode.

Underscan - shrinks the image so the entire image fits on the screen. Underscan is achieved by dropping lines out of the picture so you may notice some distortion on small text. For highest quality use the IN1776 in overscan mode.

FLICKER **FLICKER Button**

The flicker filter has three positions which are described below. Each time the **FLICKER** button is pressed the unit cycles to the next step and then returns to the first position. Perceived flicker varies according to the type of image displayed, the signal's vertical refresh rate, the display device brightness, the ambient room light, distance from the screen, and even the individual viewer's eyes. Press the **FLICKER** button several times to step through the various settings, selecting the best one for each type of material.

You will notice that there is an inverse relation between flicker control and sharpness. The most flickery setting (flicker filter off) has the sharpest image while the most flicker-free position offers the softest picture. The three choices are described below:

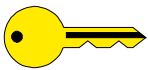
Flicker Filter OFF - (Most Flicker / Greatest Sharpness) On multimedia shows and other screens made up primarily of large text you may wish to defeat the flicker filter for maximum sharpness.

Flicker Filter Light - (Very little flicker / Average Sharpness) Most users will select the middle position as a good compromise between flicker control and sharpness.

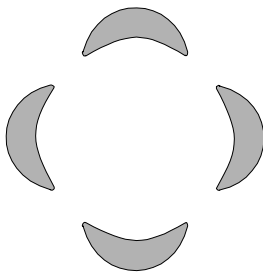
Flicker Filter Heavy - (Virtually no flicker / Softest Image) If you are displaying an image with a lot of fine lines you may wish to select the strongest flicker filter setting. This position is used for maximum picture stability and is recommended when viewing the Windows desktop or other screens with a lot of thin lines.

FREEZE **FREEZE Button**

This works like the digital freeze frame on a TV or high-end laser disc player. The IN1776 grabs the image into memory and continues to display the same image until the **FREEZE** button is pressed again. The front panel **FREEZE** indicator lights when freeze is engaged.

KEY CONCEPT

*If you press buttons on the remote and nothing seems to happen or if you are moving the mouse and don't see any movement on the screen, check the front panel **FREEZE** light to make sure that **FREEZE** is not engaged. If it is on, press the **FREEZE** button to return to a normal moving image.*

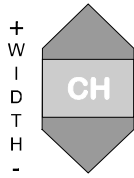
**ARROW Buttons**

These four buttons have two functions:

--**Shifting** the entire picture up/down/left/right (default mode). You may shift the image to center it in the display screen and to make sure that all vital parts of the screen are viewable. The picture moves one step each time a button is pressed.

--**Panning** around the image while in Zoom mode (only after PAN is pressed). The picture moves one step each time a button is pressed and moves continuously if a button is pressed and held.

The **SHIFT / PAN** button toggles the arrow buttons between the Shift function and the Pan function.

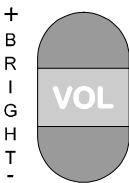


WIDTH Button

This rocker button adjusts the picture width over a 40 step range. The left side of the picture remains in place and the picture stretches in or out towards the right side. Press up to increase the width and down to decrease the width.

The WIDTH button may be used in conjunction with the four arrow buttons to position the image so that all important parts of the screen are in view. The following method is suggested:

- #1 Use the arrow buttons to shift the image so the left edge of the screen is visible.
- #2 Use the WIDTH button to adjust the right side of the screen.

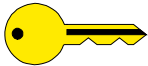


BRIGHT Button

This rocker button adjusts the picture brightness over a four step range. Press up to increase the brightness and down to decrease the brightness.

The IN1776 **BRIGHT** control usually looks best in one of the top two positions. Set it to one of these positions and then adjust the brightness and contrast on the display device.

KEY CONCEPT



*Please note that flicker can be affected by brightness settings. You may wish to lower the display's brightness control to help reduce flicker if flicker is a little bit too great. Careful adjustment of the IN1776 **BRIGHT** control and the display device's brightness control may allow you to select a more gentle flicker filter with any given type of material, resulting in a sharper image.*



STORE

STORE Button

This button stores all current settings into memory. These settings will be recalled at power up.

To use the STORE Button, set up all controls as you like them then press STORE.

You should store the overscan / underscan setting differently depending on whether you intend to turn the unit on with the front panel button or the IR remote. If you store overscan and then power up the unit with the remote's **PWR** button the IN1776 will actually go to underscan because of the macro commands stored in the **PWR** button.



RESET

RESET Button

This is used to set the IN1776 back to factory defaults. If you have made a lot of adjustments to the controls and want to return the IN1776 to factory defaults (average settings), press the RESET button. The factory default settings are listed below:

Brightness:	Step #3 of 4	Overscan:	Off (underscan)
Flicker Filter:	Not affected by RESET	Position:	Center
Zoom:	Off	Width:	Step #3 of 40
Freeze:	Off		

GETTING THE BEST IMAGE FROM YOUR SCAN CONVERTER

Beginning with a quick overview on the differences between computer video signals and conventional video signals this section concludes with several tips which will help you get the best looking images from your scan converter.

REGULAR VIDEO AND HIGH RESOLUTION COMPUTER VIDEO - WHAT'S THE DIFFERENCE?

Users are sometimes surprised when the scan converted image displayed on a conventional video monitor has lower quality than the original VGA or MAC signal displayed on their computer monitor. There are several reasons for the image quality loss, the main one being the vast differences between the two types of signals. VGA / MAC to Video scan converters such as the IN1776 have the difficult job of converting a non-interlaced, high resolution image with precise colors into an interlaced, lower resolution image with a more limited choice of colors.

Resolution

When compared to regular video signals you see on your home TV, Computer Video signals usually have higher resolution (a higher number of pixels or picture elements make up the picture). This means that the scan converter must actually throw away some of the VGA or MAC picture information and detail in order to make it display on the conventional monitor. This problem is more noticeable in the United States and other countries using the NTSC video standard since NTSC video has 100 fewer lines of picture information than the PAL video standard.

Color

Computer video systems maintain separate signals for red, green, and blue allowing more accurate color reproduction than conventional video monitors which combine all the color information into one signal. In addition to less accurate color, there is generally a narrower choice of colors available with conventional video monitors meaning that some colors shown on a computer monitor simply cannot be reproduced on a conventional video monitor, especially when sent as a composite video or S-Video signal.

Scan Methods

The other big difference between the two video systems is the way the picture is scanned on the screen. A high resolution computer video signal is usually non-interlaced. This method (also called progressive scan) "paints" all of the lines in a single pass from the top to the bottom of the screen. A conventional TV video monitor displays an interlaced video signal. This means that all of the odd numbered lines are displayed first followed by all of the even numbered lines. The two pictures made up of odd lines and even lines are displayed so quickly in succession that the human eye combines the two into a single picture.

When a non-interlaced computer video signal is converted to an interlaced signal and displayed on a conventional TV monitor/projector flicker may be observed, especially on parts of the image made of very thin lines (1 pixel) or patterns composed of thin lines.

15 TIPS FOR HAPPY SCAN CONVERSION

Preview the Scan Converted Image

The best way to ensure a good scan converted image on a conventional video screen is to connect your computer to the IN1776 and view the image displayed on the conventional video monitor while you are preparing your presentation. This will let you select the colors which look best on the video screen, determine the appropriate text size, and help you stay within the “safe title area.”

Choose Colors and Backgrounds Carefully

You may notice that intense colors and many shades of red often look bad on the conventional video monitor, whereas pastel shades, blues, greens and grays provide a more pleasing image. Solid backgrounds are usually better than gradations and patterns. If you are creating an on-screen presentation to be viewed through the scan converter, select a color scheme and background which provides the best contrast and readability. Most presentation packages offer several templates which define the background color and color of headline and bullet type.

When demonstrating software programs, view the scan converted image to select color settings which look best on the TV monitor. The Windows and Macintosh operating systems let you choose the overall color scheme which sets the colors of window borders, title bars, menu bars and menu text. Remember that some viewers may be located far from your video display so you must select the best colors in order to enhance their ability to see menu bars, icons and other small items on the screen.

Use **BIG** Fonts

You may enhance the readability of your presentation by using the largest font size possible. Headlines should be at least 36 points, bullet points should be at least 24 points and body text no smaller than 18 points. For best visibility on speaker support slides, try to limit yourself to no more than five or six lines of text and no more than 25 words per screen.

When demonstrating software you may increase visibility by selecting a sans serif font such as Arial or Helvetica for menu bars and increasing the font to a larger size. If there are parts of the screen which cannot be changed (i.e. viewing a document or spreadsheet with small text) use the ZOOM button to enhance visibility.

Don't Go Near the Edge!

Remember that conventional video monitors usually don't display the entire picture from edge to edge since they overscan by at least 5% to 10%. This means that anything located at the extreme edge of the screen may be cut off. Since the amount of overscan varies from monitor to monitor it is generally best to avoid the outer edges of the screen when placing important headlines, logos and other critical items. Be sure to view the presentation on your conventional monitor to ensure that you are staying within the safe title area.

Entire Video Image



Avoid Thin Lines and Gray Fill Patterns Made of Thin Lines

When making on-screen graphics, create lines which are at least 2 pixels thick since single pixel lines and patterns containing single pixel lines tend to create flicker problems. You may also have less flicker if you use lines which are an even number of pixels wide (2, 4, 6, 8 etc.).

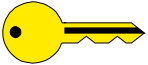
Experiment with the Three Flicker Settings

The FLICKER filter has three steps, with each step affecting both the flicker and the sharpness of the image. The middle step is best for most applications but you may need to change to a different setting depending on the type of material displayed on the screen. Since the FLICKER button is on the IR remote you can adjust it at any time, even in the middle of a presentation. Feel free to experiment with the FLICKER settings to find the best one for each application and screen.

More Tips for Flicker Reduction

- Try setting your computer to a higher refresh rate (i.e. 72 Hz instead of 60 Hz).
- Set your computer to 16 bit or 24 bit mode (65,000 colors or 16.7 million colors). The High Color and True Color modes feature a wider color palette which creates colors directly. 16 Color and 256 color modes use dithering patterns to create many colors and these may cause flicker. An added benefit of the high color modes is the elimination of palette snaps and flashes.
- Reduce the brightness or contrast control on your video display.
- Try different room lighting. You may wish to turn off fluorescent lights as they may interact with the video display, causing more flicker.
- Use the IN1776 OVERSCAN mode. The flicker reduction filter is more effective in this setting.
- Use the shift controls to move the picture up/down or side to side. Some screen positions are more solid than others.

KEY CONCEPT



Use the S-Video Signal

The IN1776 S-Video output provides much better clarity than the composite video output. If you have access to a video display or VCR with an S-Video input be sure to use this signal.

Set the IN1776 to Overscan

The IN1776 provides the best quality image when in the OVERSCAN mode (indicated when the front panel OVERSCAN LED is lit). If you create your presentation avoiding the areas right around the edge then you will be able to use the unit in Overscan. If you are showing an image and part of the information is off the screen you may use the SHIFT buttons on the remote to move the image around as needed.

Use Good Quality Tape

If you are recording the output of the scan converter use a good quality videotape and record in the SP mode. Standard VHS machines only provide about 220 lines of resolution and while this is adequate for recording on-screen slide show presentations and multimedia shows with large type it is generally not enough resolution to record detailed software demonstrations featuring Windows and Macintosh application screens. If practical for your application, use a higher resolution VCR format such as S-VHS, Hi-8, or even Betacam, connecting the S-Video output on the IN1776 to the S-Video (Y/C) input on the VCR.

SPECIFICATIONS

INPUT:

Connectors: (1) 15-Pin HD Male

Compatible Signals: Standards: VGA, SVGA, XGA, MAC II
Resolutions: 512 x 384, 640 x 400, 640 x 480, 800 x 600
Vertical Refresh Rates: 50 Hz to 80 Hz
Signal Formats: RGBHV or RGBS

OUTPUT:

Local Monitor: (1) 15-Pin HD female, buffered output - *not scan converted*

Composite Video: (1) RCA Female & (1) BNC Female

S-Video: (1) 4-Pin Mini DIN Female for Y/C

RGBS: (4) BNC Female

GENERAL:

Accessories Included: IN1776 IR Infrared Remote Control
(4) AAA batteries
IN9095 Composite Video Cable, RCA Male to RCA Male, 6'
IN9096 S-Video Cable, 4-Pin Mini Din Male to Male, 6'
IN8006 VGA Input Cable, 15-Pin HD Male to Female, 6'
IN9097 MAC Input Cable, 15-Pin D Male to 15-Pin HD Female, 6'
IN9099 MAC Output Cable, 15-Pin D Female to 15-Pin HD Male, 1'
A/C Power Cord

Optional Accessories: IN9126 Rack Mount Ears, mounts IN1776 in 1U rack space
IN9046 BNC Input Cable, 15-Pin HD Female to (5) Male BNC, 12'
IN7000-4 Series RGBS Output Cables - Available in a variety of lengths from 6' to 250'

Power Supply: Internal Transformer for 110 / 220 VAC, 60/50 Hz (User selectable)

Fuse: 110VAC: 250 mA/250V, Time Delay
220VAC: 125mA / 250V, Time Delay

Power Consumption: 15 Watts

Shipping Weight: 8 lbs. [3.6 Kg]

Product Weight: 4 lbs. [1.8 Kg]

Dimensions: 1.75 x 11.75 x 7 inches [4.45 x 29.85 x 17.75 cm]

TROUBLESHOOTING

Scrambled Picture on Video Monitor / Interference on Local Monitor- Your computer is probably set to a resolution higher than 800 x 600. Set it to 640 x 480 or 800 x 600 resolution.

No Movement on Screen / Remote Control Doesn't Work - FREEZE is probably engaged. Check the front panel LED and if FREEZE is on use the **FREEZE** button remote to turn it off.

Remote Control Doesn't Work - You may have pressed one of the device selector buttons at the top (**CD/VCR/CBL/AUX2/TV**) and the remote is not controlling the IN1776 any longer. Press the **IN1776** button or the **PWR** button. The remote will now control the IN1776.

Picture is Very Dark - You may have shifted the picture too far to one side. Try pressing the right or left shift buttons to see if that improves picture brightness.

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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