



A WORLD OF A/V SOLUTIONS



SIGNAL CONVERTERS

**IN1776QZX VGA/MAC TO VIDEO SCAN CONVERTER  
WITH QUADRANT ZOOM AND IR CONTROL**



**IN1776QZX**  
**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.

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## PRODUCT OVERVIEW

### DESCRIPTION

The **IN1776QZX** is a full-featured scan converter which transforms VGA or MAC type signals into either standard NTSC or PAL video formats, 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 **IN1776QZX** lets you transfer PC or MAC generated images to a wide variety of conventional video equipment.

### PRODUCT FEATURES

- **Wide Input Signal Compatibility** - The **IN1776QZX** accepts VGA and MAC type computer video signals at resolutions from 512 x 384 up to 1024 x 768. The **IN1776QZX** is compatible with scan rates from 24KHz – 66KHz and vertical refresh rates from 50Hz – 100Hz, making it flexible enough to operate with a wide variety of computer video signals.
- **Infrared Remote Control** - allows presenters to move freely around the room. The remote control makes it easy to adjust picture height & width, position, underscan/overscan, freeze, zoom, pan, flicker filter, brightness and all other controls up to 50' away from the unit. The infrared control port also allows for complete system integration since the **IN1776QZX** may be rack mounted and controlled by a third-party control system.
- **Seven Position Flicker Filter** - An advanced design lets users select one of seven settings to produce the optimal combination of flicker reduction and image sharpness for each type of display application.
- **Zoom and Pan** - By simply pressing a button, users may zoom-in to display an enlarged view of detailed drawings or fine text (up to 2x magnification), press the pan controls to browse smoothly around the picture, then press zoom again to see the entire screen. Quadrant Zoom offers direct access to nine different positions on the screen.
- **Local Monitor Output** - provides a buffered signal for the local computer 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. No termination is required if the **IN1776QZX** is used without a local monitor.
- **Flexible Output Formats** - Featuring Composite Video, S-Video, and RGBS outputs, the **IN1776QZX** 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 unit may actually drive up to three video displays simultaneously (in addition to the local computer monitor).

## INPUT COMPATIBILITY

The **IN1776QZX** will work with video signals from PC compatible computers and the Macintosh family of computers as follows:

### VGA / SVGA / XGA

Resolutions:	640 x 480
	800 x 600
	1024 x 768
Vertical Refresh Rate:	50 to 100 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 100 Hz

### Other Signals

The **IN1776QZX** 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 **IN1776QZX** 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 vertical scan rates or sync format, but the video resolution which must not exceed 1024 x 768 and the horizontal scan rate which must not exceed 66 KHz.**

Using an optional input adapter, the **IN1776QZX** 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, 823 x 624, 1024 x 768
Horizontal Scan Rate:	24 KHz - 66 KHz
Vertical Refresh Rate:	Up to 100 Hz
RGB Video Signals:	Analog Video, 0.7 Vp-p
Sync Signals:	Composite Sync or Separate (H & V) Sync

## OUTPUT COMPATIBILITY

The **IN1776QZX** output signal may be connected to many types of video equipment including TV & presentation monitors, video projectors, VCRs and teleconferencing equipment. Video output is offered in three formats:

**Composite Video** - Offers the widest compatibility with consumer video equipment such as TV monitors, VCRs and other equipment with 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, and S-VHS 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. This format is most frequently used with industrial and professional grade video projectors, RGB monitors and retro-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 IN1776QZX 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 **IN1776QZX VGA / MAC INPUT** port. The computer's VGA port is a 15-pin HD female connector located on the rear of the computer. It looks like this:



### ***#2 Connect the local computer monitor to the IN1776QZX.***

Attach the VGA monitor cable to the **LOCAL MONITOR OUTPUT** port on the **IN1776QZX**. *If you are using a laptop computer or do not wish to have a local monitor you may leave the IN1776QZX LOCAL MONITOR OUTPUT port open - no termination plug is required.*

### ***#3 Connect the IN1776QZX 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 **IN1776QZX**. *You may not connect displays to both the RCA and BNC connector simultaneously.*

**RCA Connector** - connect the **IN1776QZX 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 **IN1776QZX 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 **IN1776QZX 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 **IN1776QZX 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.

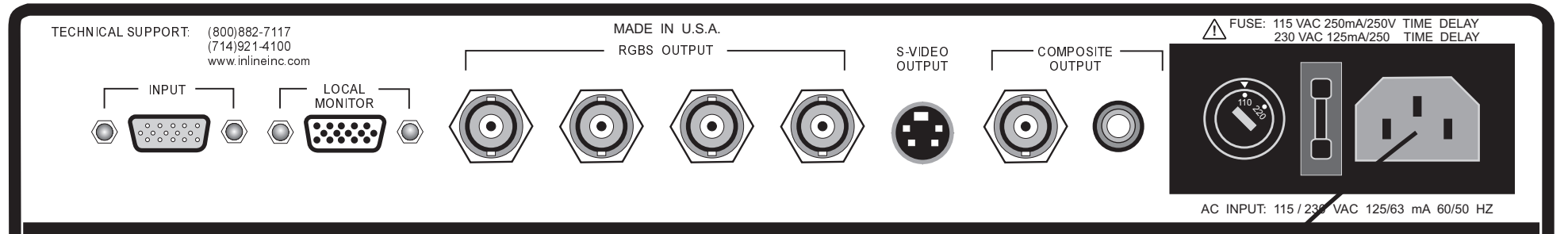
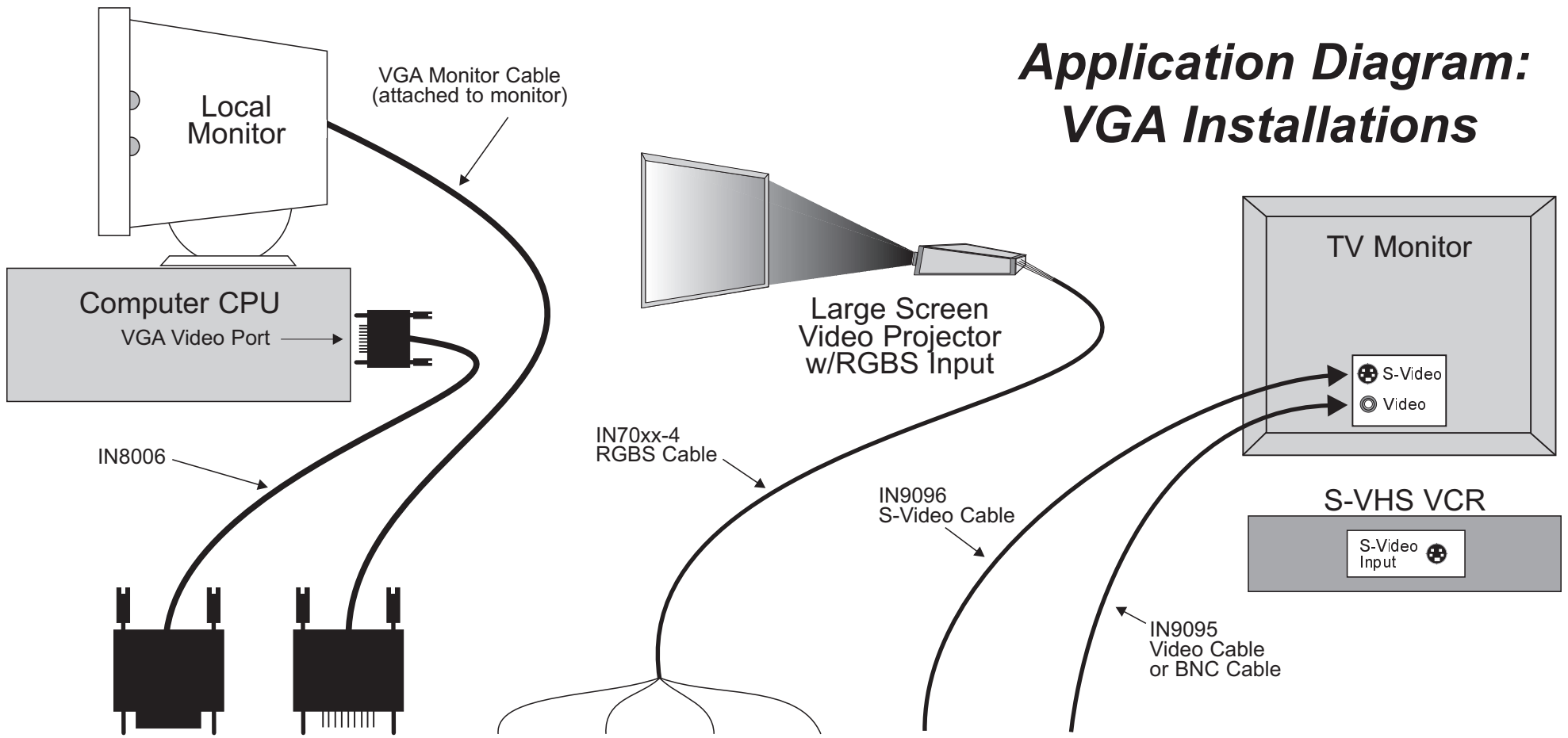
### ***#4 Check the power selector switch and connect the A/C power source.***

- 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 **IN1776QZX** 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.

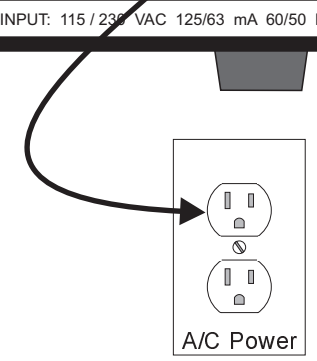
### ***#5 Load batteries into the Infrared Remote control.***

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 unit.

# Application Diagram: VGA Installations



IN1776QZX - Rear Panel

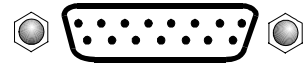


## INSTALLATION - MACINTOSH COMPUTERS

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 IN1776QZX Input.***

- Disconnect the local computer monitor (if present) from the computer's video port.  
 - Connect the computer's video port to the **IN1776QZX 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. It looks like this:



- If you are working with an older PowerBook computer the video port may look 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 IN1776QZX.***

Attach the MAC monitor cable to the **LOCAL MONITOR OUTPUT** port on the **IN1776QZX** using the **IN9099** MAC Output Adapter cable supplied with the unit.

### ***#3 Connect the IN1776QZX 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 **IN1776QZX**. You may not connect displays to both the RCA and BNC connector simultaneously.

**RCA Connector** - connect the **IN1776QZX 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 **IN1776QZX 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 **IN1776QZX 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 **IN1776QZX 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.***

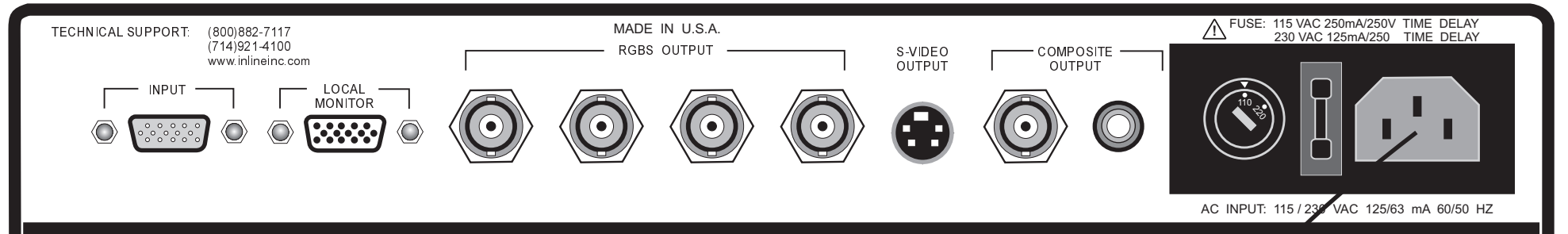
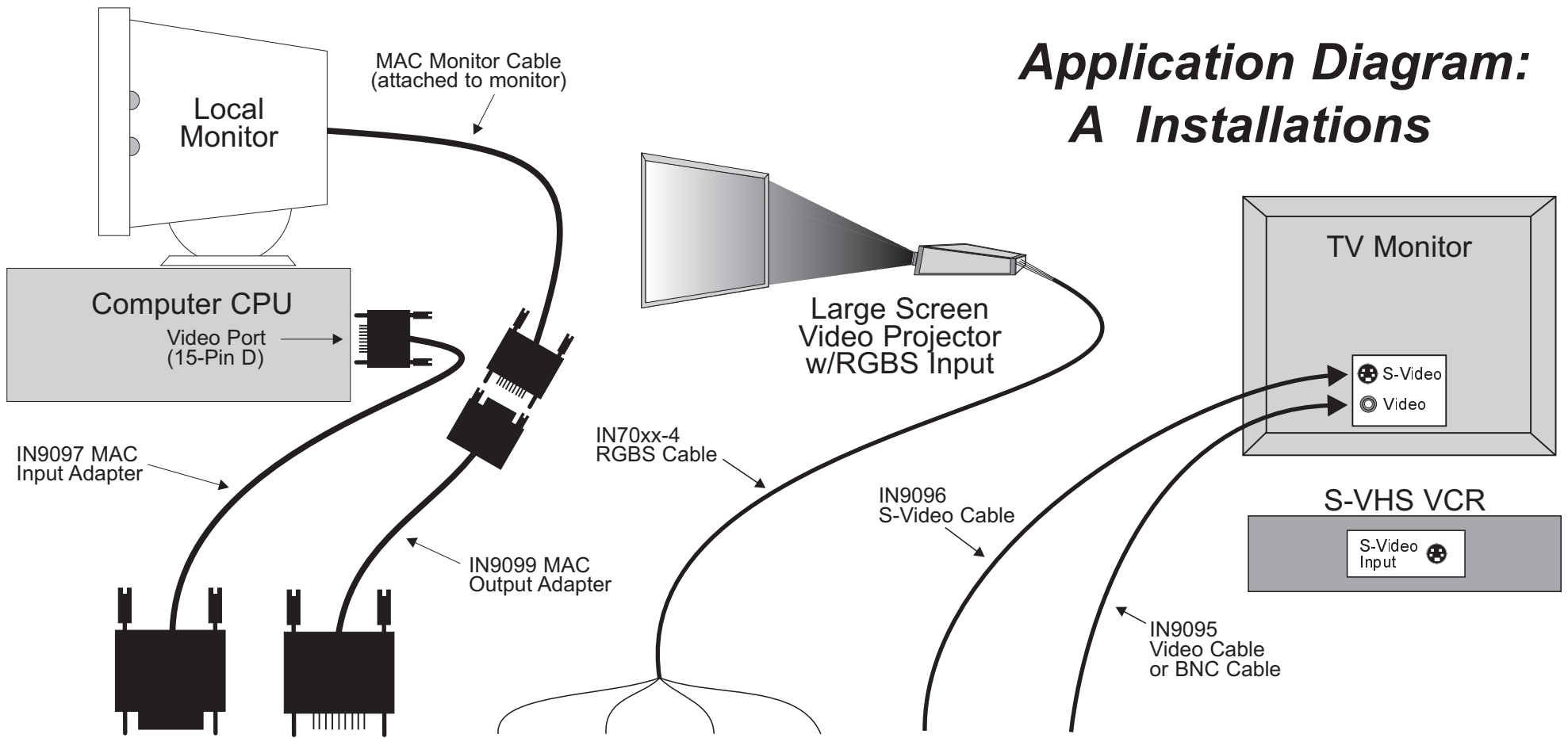
- Check to see that the 110 / 220 switch on the back of the unit matches the local A/C line level. This switch can be changed if necessary by using a small straight slot screw driver.  
 - Connect the **IN1776QZX** power entry module to an A/C power source with the power cord provided (US versions only). 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.***

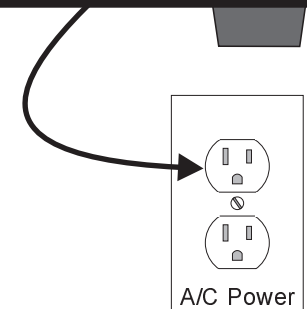
The IR remote control requires (4) AAA batteries (included with the unit). Place these in the battery holder in the back of the remote control as indicated on the drawing inside the unit.



# Application Diagram: A Installations



IN1776QZX - Rear Panel



## SPECIAL CONCERNS WHEN CONNECTING TO MACINTOSH COMPUTERS

### *Installing the IN1776QZX 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 **IN1776QZX 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** – Some older PowerBooks use HDI-45 pin connectors. Apple provides a video adapter with these PowerBooks that 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 very old 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 **IN1776QZX** or an auxiliary computer monitor.

**Macintosh G3 Models** - Newer models have a 15-pin HD connector with pin outs very similar to standard VGA. This connector can be plugged directly into the converter using the **IN8006** input cable provided. No MAC input / output adapters are required.

**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 **IN1776QZX** is now acting as the primary monitor.

In order to display identical images on the PowerBook and the video display connected to the **IN1776QZX** 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 IN1776QZX

The **IN1776QZX** Scan Converter comes in two versions, both of which offer identical input compatibility and features. The only difference between the two converters 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 **IN1776QZX** are marked on the rear panel with a sticker indicating “**PAL.**”

## OPERATING THE IN1776QZX SCAN CONVERTER

### FRONT PANEL CONTROLS / INDICATORS

The **IN1776QZX** front panel has only one button (POWER) as virtually all picture adjustments are controlled by the infrared remote control. Indicator lights on the **IN1776QZX** front panel show the current status of the unit.

#### POWER Button / Power LED

The Power button turns the **IN1776QZX** on or off. Press lightly on the raised green button to activate the power. The Power LED will light or go dark, indicating whether the **IN1776QZX** 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.

### USING THE INFRARED REMOTE CONTROL

The IR remote included with the **IN1776QZX** 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 **IN1776QZX** when using the remote. The IR remote has dual transmitter LEDs that put out a very strong signal. 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 **IN1776QZX**. 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 **IN1776QZX**.

### SELECTING THE DEVICE TO CONTROL

While the **IN1776QZX** IR remote has the capability of controlling the **IN1776QZX** as well as other devices, this manual only covers the use of the IR remote to control the **IN1776QZX**. The six buttons at the top of the unit marked **CD**, **VCR**, **CBL**, **IN1776QZ**, **AUX 2**, and **TV** determine which device the remote is currently operating. There are two ways to switch the remote to the **IN1776QZX** control mode:

- #1 - Press the **IN1776QZX** 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 **IN1776QZX**.

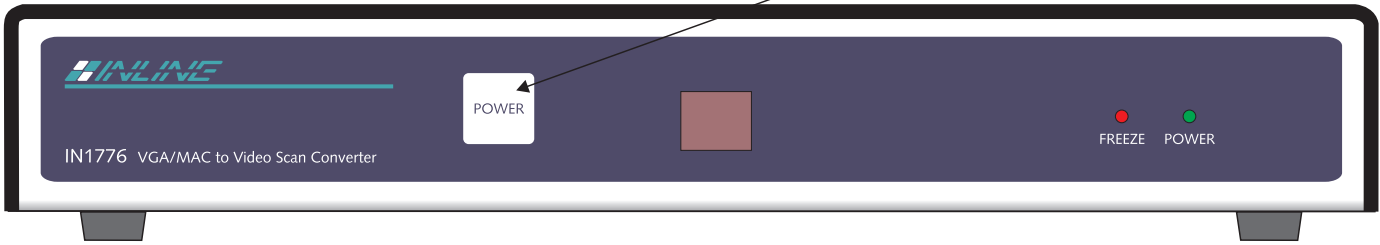
#### KEY CONCEPT



*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 **IN1776QZ** and the remote will function normally to control the **IN1776QZX**.*

# IN1776QZX Controls

Press the front panel POWER button to turn IN1776QZX power on or off.



Press IN1776QZ to use remote for IN1776QZX after controlling other devices (TV, VCR, etc.)

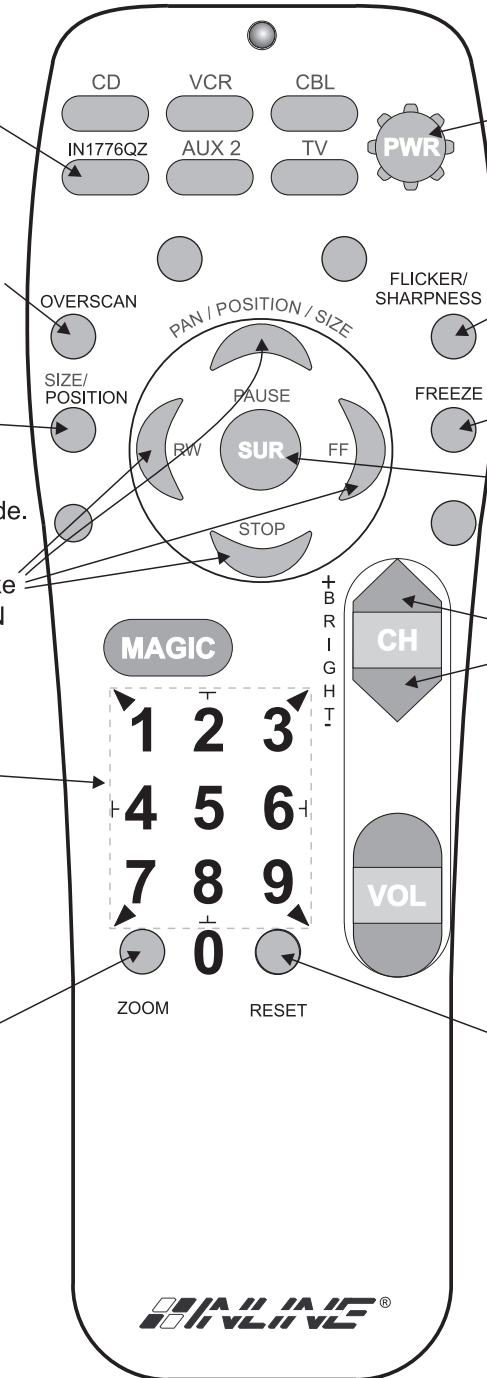
Press OVERSCAN to step between Max Overscan, Overscan, Underscan and Max Underscan Settings.

Press SIZE / POSITION to toggle between these functions: use the buttons to adjust image height and width in the SIZE mode or to shift the image in the POSITION mode.

Use the four arrow keys to make image SIZE, POSITION or PAN adjustments.

Press the 1 - 9 numeric buttons for Quadrant Zoom. Press 1 for Upper Left Corner, Press 9 for Lower Right Corner, etc.

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



Press PWR to turn IN1776QZX power on or off.

FLICKER / SHARPNESS steps through the seven flicker filter / sharpness settings.

FREEZE engages or releases freeze frame.

Press the SUR button to Toggle the buttons between PAN mode and POSITION / SIZE mode.

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

Press RESET to set IN1776QZX back to factory default settings.

## IN1776QZX CONTROL BUTTONS

All the **IN1776QZX** control buttons are color coded with green name labels next to them for quick identification. The only exceptions to this are the **PWR** button, the four **ARROW** buttons, the **MAGIC** button, the **VOLUME** toggle and the five buttons at the top of the unit marked **CD**, **VCR**, **CBL**, **AUX 2** and **TV**. These buttons are used in conjunction with other projection / display / recording units. This manual *ONLY* describes the remote buttons that have green labels. 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 and 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 **IN1776QZX**
- Turns on the **IN1776QZX**
- Sets the **IN1776QZX** to Overscan

OVER  
SCAN



### **OVERSCAN Button**

This button toggles the **IN1776QZX** between overscan and underscan each time it is pressed. When working with signals at 1024 x 768 resolution the unit cycles through four steps: Maximum Overscan / 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.

**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 **IN1776QZX** in overscan mode.

Note: The **OVERSCAN** button will not work when the **IN1776QZX** is in ZOOM mode

FLICKER



### **FLICKER / SHARPNESS Button**

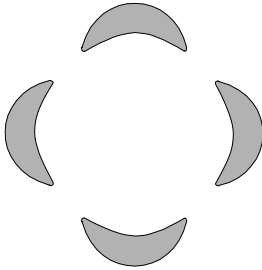
The flicker filter has seven positions. Each time the **FLICKER / SHARPNESS** button is pressed the unit cycles to the next flicker filter and eventually returns to the original flicker setting. Perceived flicker varies according to the type of image displayed, the signal's vertical refresh rate, the 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 settings have the sharpest image while the most flicker-free position offers the softest picture. Three of the seven steps 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 single pixel lines.



### ARROW Buttons

These four buttons can control three functions:

--**Image Position** shifts the entire picture up/down/left/right (default mode for the arrow buttons). 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.

--**Image Size** - Press the up arrow to increase the image height and down arrow to decrease the image height. Press the right arrow to increase the image width and the left arrow to decrease the width.

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

The different functions are selected using the **SIZE / POSITION** button or the **SUR** button



### SIZE / POSITION Button

The **SIZE / POSITION** button acts as a shift key that determines the current function of the arrow buttons. Each time the **SIZE / POSITION** button is pressed it toggles the arrow buttons between size adjust and position adjust. When the **POSITION** function is selected, the entire image can be shifted vertically or horizontally by using the arrow buttons. When **SIZE** is selected, the user can adjust the picture's height and width. The left / top of the picture remains in place and the picture stretches in or out toward the right side / bottom.



### SUR Button

The **SUR** button acts as a shift key to toggle the four arrow buttons between the pan mode and size / position adjust mode. Pan mode is functional only if the unit is in zoom.

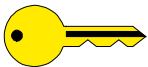
FREEZE



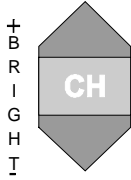
### FREEZE Button

This works like the digital freeze frame on a TV or DVD player. The **IN1776QZX** 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.*

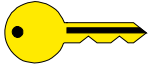


**BRIGHT Control**

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

The **IN1776QZX 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 **IN1776QZX 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.*

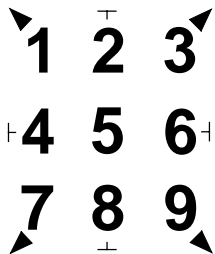


**ZOOM Button**

When **ZOOM** is pressed the unit toggles between zoom mode and normal mode. With zoom engaged the **IN1776QZX** 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 2X its normal size. While in the zoom mode you may use the arrow keys to move around to any other part of the screen, as well as the **SIZE / POSITION** button to move the picture as desired. Press **ZOOM** again to return to a normal view of the entire image.

The **IN1776QZX** remembers the last zoom location, allowing users to preset this location ahead of time. Simply press the **ZOOM** button and use the **ARROW** keys to adjust the picture to the desired display position. At the appropriate time(s) in your presentation, engage the **ZOOM** button and the unit will zoom in to that part of the screen that you wish to emphasize.

**QUADRANT ZOOM BUTTONS**



The buttons numbered one through nine on the remote control allow the user to instantly select nine different zoom positions on the screen. While in full display mode, users may zoom directly into the area they wish to magnify simply by pressing the appropriate number (it is not necessary to press the **ZOOM** button every time you wish to emphasize a section of the picture). Pressing **ZOOM** will restore the full-screen image. Quadrant zoom is the quickest way to zoom to a specific location on the screen and is much easier than using the regular zoom and pan functions.



**RESET Button**

This is used to set the **IN1776QZX** back to factory defaults. If you have made a lot of adjustments to the controls and want to return the **IN1776QZX** 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:	Step #2 of 7	Position:	Center
Zoom:	Off	Freeze:	Off

Caution: Using the **RESET** button will disengage ALL other preset functions.

## 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 **IN1776QZX** 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 a higher resolution (a higher number of pixels or picture elements make up the image). This means that the scan converter must actually throw away some of the VGA or MAC picture information and detail in order to transfer the image to a conventional monitor. This problem is more noticeable in the United States and other countries using the NTSC video standard because the system 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. Therefore, some colors shown on a computer monitor simply cannot be reproduced on a conventional video screen, especially when sent as a composite video or an 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 **IN1776QZX** and view the image displayed on the conventional video monitor *before* you begin your presentation. This will let you select the colors that 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 that define background hues and the colors of headlines and bullet types.

Before demonstrating software programs, view the scan-converted image to select color settings that look best on the TV monitor. The Windows and Macintosh operating systems let you choose the overall color scheme that sets the colors of window borders, title bars, menu text and other small items. 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 illustrations, icons and other detailed information.

### 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. Lines and patterns containing single pixels tend to create flicker problems. You may also lessen or avoid the problem if you use lines which are an even number of pixels wide (2, 4, 6, 8 etc.).

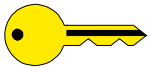
### **Experiment with the Seven Flicker Settings**

The FLICKER filter has seven steps, with each step affecting both the flicker and the sharpness of the image. The middle steps are 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 / Sharpness** 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 filter settings (before your presentation) 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. Sixteen 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 **IN1776QZX 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 IN1776QZX S-Video output provides much better clarity than the composite video output. Be sure to use this signal if you have access to a video display or VCR with an S-Video input.*

### **Set the IN1776QZX to Overscan**

The **IN1776QZX** provides the best quality image when in the OVERSCAN mode (indicated when the front panel OVERSCAN LED is lit). If you are showing an image in OVERSCAN mode 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. (Hint: For best results, avoid using the areas along the outer edge of the screen when you create your presentation.)

### **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. 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 **IN1776QZX** to the S-Video (Y/C) input on the VCR.

<b>SPECIFICATIONS</b>
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<b>IN1776QZX Scan Converter</b>	
<b>Input</b>	
Connector Type	15-pin HD Male (Adapter provided for MAC)
Compatible Formats	RGB / RGBS / RGsB / RGBHVS
Compatible Resolutions	VGA: 640 x 480, 800 x 600, 1024 x 768 MAC: 512 x 384, 640 x 480, 832 x 624, 1024 x 768
Horizontal Scan Rate	24 KHz to 66 KHz
Vertical Refresh Rate	50 Hz to 100 Hz
<b>Output</b>	
Local Monitor	15-pin HD Female (Adapter provided for MAC)
Composite Video	(1) RCA Female & (1) BNC Female
S-Video	(1) 4-pin Female Mini-DIN for Y/C
RGB Video	(4) BNC Female for RGBS
<b>Power</b>	
Power Supply	Internal 115 / 230 VAC, 50 / 60 Hz (selectable)
Fuse	110VAC: 250mA / 250V, Time Delay 220VAC: 125mA / 250V, Time Delay
Power Consumption	15 Watts
<b>Dimensions</b>	
Size	1.75" x 11.75" x 6.5" / 4.5cm. x 29.8cm x 16.5cm
Product Weight	4 lbs. / 1.8 kg.
Shipping Weight	7 lbs. / 3.5 kg.
<b>Regulatory Approvals</b>	UL1950, CAN/CSA-22.2 No. 950, Third Edition CE: EN55022 (1987), EN50081-1 (1991) EN50082-1 (1992 and 1994), EN60950-92

### INCLUDED ACCESSORIES

- IN1776QZXIR** Infrared Remote Control, (4) AAA batteries
- IN9095** Composite Video Cable, RCA Male to RCA Male, 6'
- IN8606** 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

- IN9121** Rack Mount Ears, mounts **IN1776QZX** 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'

## TROUBLESHOOTING

**Scrambled Picture on Video Monitor / Interference on Local Monitor**- Your computer is probably set to a resolution higher than 1024 x 768. Set it to 640 x 480, 800 x 600 or 1024 x 768 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 on the IR remote to turn it off.

**Remote Control Doesn't Work -**

**Solution #1** - 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 **IN1776QZX** any longer. Press the **IN1776QZX** button or the **PWR** button. The remote will now control the unit.

**Solution #2** - The batteries in the remote may be weak or dead. Replace them and try again.

**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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