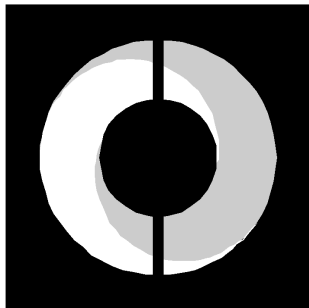
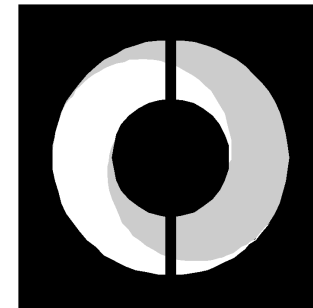


# ***CVD 7177***

## ***Scan Converter***



C O V I D



C O V I D

1723 West 4<sup>th</sup> Street / Tempe, AZ 85281  
phone (480) 966-2221 / fax (480) 966-6728  
toll free (800) 638-6104  
internet: [www.covid.com](http://www.covid.com)

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## **User's Manual**

**DISCLAIMER**

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## **European EMC 'CE' mark statement**

### ***EMC standards applied & passed***

Emissions: EN 55022 (ITE emissions standards), Class B

Immunity: EN 50082-1 (Generic Immunity standard for residential, commercial and light industrial)

## **FCC statement**

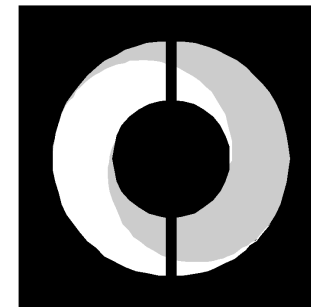
Class A Device: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the User's Manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution: This equipment is intended for use in the manner prescribed in the User's Manual. Any user changes or modifications not expressly approved by Covid, Inc. could void the user's authority to operate the equipment. Connecting this equipment to external devices requires no specially shielded cabling for FCC compliance. The User's Manual shows the proper connection of this equipment for operation that insures FCC compliance.

# ***CVD 7177***

## ***Scan Converter***

### **A Simple Solution for Converting a VGA Source to a Television Signal**



**C O V I D**

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## **How can I reduce smearing?**

Smearing usually occurs on Composite Video connections, and is generally unavoidable - unless you can switch to using S-Video or RGB connections. It occurs because the brightness and color information is transmitted as one signal, and the two parts have to be 'bandwidth-limited' to avoid them interfering with each other. Using good quality video cable will help towards reducing this affect.

## **How do I use the unit with a VCR?**

Connect one of the unit's video outputs (probably the Composite Video lead) to the VCR's input. Note that you won't be connecting to the RF connector on the VCR, but to one of the VCR's auxiliary (AUX) inputs, so you have to therefore tell the VCR which input to use - often it's channel 0, or AUX 1, AUX 2, etc.

## **The recorded image is poor.**

Standard VHS videos are not very good at recording the fine detail present in computer graphics. S-VHS decks offer much better quality, while professional decks will be even better. Color smearing is usually the first thing that causes a problem, but this is because your video isn't capable of recording the picture in its full resolution - it is not a fault with the CVD 7177 or your video. Try lowering the computer screen resolution - this will bring the image more in-line with what your video is used to dealing with.

## **The mouse emulation isn't working.**

Check that the RS232 cable is connected correctly to both the RS232 port on the back of the CVD 7177 and to the serial port that the computer uses for the mouse.

Check that the CVD 7177 is set-up for the Mouse and not Serial control. Check that the infra red remote control has good batteries installed and that the CVD 7177 is configured to work from the remote.

The CVD 7177 uses the standard Microsoft® Serial Mouse driver, it will not work with other mouse drivers. If problems arise, it is recommended that the computer be started up with its normal mouse connected, once the computer has finished booting up and the mouse confirmed working it can be swapped over with the CVD 7177 RS232 cable.

### **There is no picture on the computer monitor.**

Check that the monitor output from the computer is connected to the CVD 7177's INPUT connector. Check that your computer monitor is connected to the LOCAL OUTPUT on the back of the unit. Check that your computer monitor is turned on and the brightness and contrasts are set correctly.

### **The display on the TV has a huge border around it**

You're almost certainly running the unit with a laptop computer, at a resolution lower than the laptop's own screen. When this happens, the laptop fits the smaller resolution into the larger with a border around the edge. Since the laptop's screen is of a fixed resolution, the only two solutions are: 1) change the resolution you're running at to match the laptop's own internal screen; 2) disable the laptop's own screen, so you just see the image on the TV.

### **The unit does not respond to the Infra Red remote control.**

Ensure that there are batteries in the remote control unit are correctly inserted and that they have enough charge left. Make sure that there is no obstruction in front of the CVD 7177's Infra Red window. Ensure that the unit is set for control from the IR unit.

### **There is excessive flicker on the TV.**

Try using a different flicker mode. Turning the contrast down and the brightness up on the TV can have a large effect on flicker.

### **The TV image is distorted.**

This often occurs where some of the areas of the image are very dark and others are very bright. These extreme changes in the image are difficult for your TV monitor to deal with. Try adjusting the contrast and brightness settings on your TV to rectify the problem. On some TVs (usually old ones), this effect is unavoidable as they may not be designed with computer images in mind, and therefore show 'bowing' at the sides for some graphic images. The only solution is to adjust the brightness and contrast on your TV - the CVD 7177 is not at fault and cannot correct problems with your TV.

If the problem still persists it may be due to the screen size settings, try adjusting the image and its position on the screen.

### **Some colors come out incorrectly on the TV.**

Try altering the color, contrast and brightness settings on your TV. These are usually set up for viewing TV programs which is very different from viewing computer graphics.

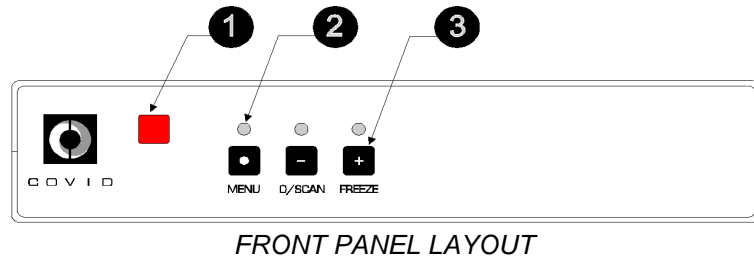
If you are using the RGB video output from the CVD 7177 make sure that the cable is correctly attached to both the unit and the TV monitor.

## Introduction

Thank you for purchasing a CVD 7177 Scan Converter. Covid's CVD 7177 provides a simple solution for converting computer text and graphics to quality video output for presentation. It can be controlled via the Front Panel Keypad, RS232, or infra-red remote. Some of the features of the CVD 7177 Scan Converter include:

- Absolute maximum of 1600x1200 resolution (1024x768 recommended)
- 4-line flicker reduction for super-stable image on TV
- Automatic screen adjustment
- Full-feature infra red remote control
- Quick adjust panel buttons for Overscan and Freeze
- 2x Zoom & pan
- No software driver required
- Composite Video, S-Video, RGB outputs
- Loop-through for local VGA monitor
- NTSC & PAL selectable
- Non-volatile memory saves all settings
- Button Lock feature prevents settings being altered by accident
- Remote control Lock-out perfect for education and exhibitions
- Works with very high refresh rates
- Professional image quality - crisp and clear
- Brightness Control - allows video output from the unit to be adjusted to match other video hardware, such as playback of a video tape.
- On-screen display for ease of use
- Microsoft® Serial Mouse emulation on infra-red Remote Control
- Port sharer supplied allows Microsoft® Serial Mouse and infra-red mouse to be connected at the same time
- RS232 interface for control of unit from your software
- Dual video outputs (Composite Video and S-Video) make Presentation setup easier.

## Panel Descriptions



### FRONT PANEL

1. **INFRA RED WINDOW:** For remote control, do not block.
2. **POWER-ON LED:** When the unit is powered the button labeled MENU will illuminate green. It will flash if either of the Button or Remote Control Lock functions are enabled, as described later in the manual. Pressing the Menu button will start the On-screen display set up of various functions, which are described later.
3. **O/SCAN (OVERSCAN) / - (DECREASE) BUTTON AND LED:** The O/Scan button mimics the remote control key of the same name, and is described later in the manual. When in O/Scan mode this button will illuminate. This button is also used to decrease a value displayed with the On-screen display.  
  
**FREEZE / + (INCREASE) BUTTON AND LED:** The Freeze button mimics the remote control key of the same name, and is described later in the manual. When in Freeze mode this button will flash, to warn the user that other controls are disabled. This button is also used to increase a value displayed with the On-screen display.

### SPECIAL BUTTON USAGE ON POWER-UP

Certain buttons can be held down when applying power to the unit, to perform certain functions:

1. **Factory Reset.** Hold down both the O/Scan and Freeze button when turning the unit on. This will reset the unit to Factory settings (and set the unit into NTSC video mode). It should only be used if the unit's settings give an invalid output that the user cannot exit from, as all user-settings will be lost.
2. **Set to NTSC mode.** This is done by holding the O/Scan button down when turning on the unit. This changes the non-volatile PAL/NTSC setting to NTSC, and will be remembered even when power is removed.
3. **Set to PAL mode.** This is done by holding the Freeze button down when turning on the unit. This changes the non-volatile PAL/NTSC setting to PAL, and will be remembered even when power is removed.

## Troubleshooting

If problems are experienced, please go through these help topics to help you resolve the problem. Otherwise, if you need to contact Technical Support, please have the following handy:

1. Details of the problem.
2. Whether the problem happens only at specific times, or has only just started occurring.
3. Hardware and Software revisions, if available. These are displayed on the CVD 7177 when you power-up the unit.
4. If the problem is image related, please try to find out the screen resolution and refresh rate being used, from the computer - and if the problem only affects one particular resolution.

### The picture on the video display is black and white.

If you are using the S-Video or Composite outputs, then make sure that all these cables are connected correctly. Make sure that the CVD 7177 is selected to the right video standard PAL/NTSC. Ensure that the color controls on your TV monitor are all set correctly.

### There is no picture on my TV monitor.

If you're using the unit with a laptop computer, you may need to tell the laptop that an external display device is connected. Some laptops automatically detect external video connections, but others will need setting up to do so - often in the form of pressing two keys simultaneously on the keyboard.

If the Green Power LED on the CVD 7177 is off, ensure that the power adaptor is connected properly and is switched on. If the LED on the unit is on, then check that the monitor output from the computer is connected to the CVD 7177's INPUT connector. Check that the output you are using from the CVD 7177 unit is also connected at the unit and the TV. Check that your TV monitor is switched on and set to the correct input (AUX or A/V selected), also make sure that the brightness and contrast are set correctly.

# General Specifications

## CVD 7177 SCAN CONVERTER

### INPUT:

Signal:	Analog RGBHV
Connector:	(1) HD-15 Female
Video Impedance:	75 Ohms
Video Level:	0.7— 1.0 Vpp
Sync Level:	Analog / TTL
Sync Polarity:	+ / -

### OUTPUT:

Signals:	VGA, RGB, Composite, S-Video
Connectors:	(2) HD-15, (2) RCA, (2) S-Video
Video Level:	1.0 Vpp, for Composite & S-Video 0.7 Vpp, for RGB
Video Impedance:	75 Ohms

### RESOLUTION:

Maximum:	1600 x 1200
Recommended:	1024 x 768
Horizontal Scan Rate:	24KHz to 100KHz
Syncs:	TTL Level Separate Hsync & Vsync

### CONTROL:

Front Panel Keypad
Infra Red Remote Control
RS232
Emulation of Microsoft® Serial Mouse via RS232 port

## PHYSICAL SPECIFICATIONS

### DIMENSIONS:

1U High, 1/2 Rack Wide
(in) 1.75 H x 8.50 W x 6.00 D
(cm) 4.45 H x 21.59 W x 15.24 D

### ENCLOSURE:

Aluminum, Black, Texture Finish

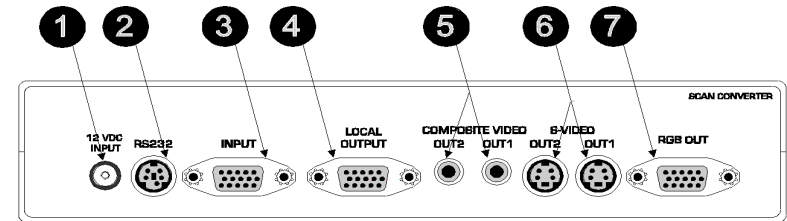
### WEIGHT:

Net:	1.2 lbs. / 0.54 kg
------	--------------------

### POWER:

Input:	110 or 220 VAC Wall Mount, 12 VDC, 800 mA, UL
Dissipated:	3.6 Watts

## Panel Descriptions



REAR PANEL LAYOUT

## REAR PANEL

- 1. DC IN:** Power in accepts 12 VDC from the Wall Mount power cube.
- 2. RS232/MOUSE CONTROL:** Accepts input from the RS232 sharer cable.
- 3. INPUT:** HD-15 Female connector accepts the input signal.
- 4. OUTPUT:** HD-15 Female connector provides the loop through output for the local monitor.
- 5. OUTPUT:** Two RCA jacks provide simultaneous output signals for display on television monitors.
- 6. OUTPUT:** Two 4-pin mini-DIN connectors provide simultaneous output signals for display on television monitors.
- 7. OUTPUT:** HD-15 Female connector provides RGB output for display on television monitors.

## Operational Setup

Turn off all equipment before connecting or removing cables.

First, using the computer lead supplied, connect one end to the monitor output connector on your computer and the other end to the "INPUT" connector. Now connect your computer monitor's video lead to the "LOCAL OUTPUT" connector. Internally, the video signals are looped-through, allowing use even when the unit's power is off.

Depending on which video format you are using (Composite, S-Video or RGB) connect the relevant lead, between the socket at the rear of the unit, and your TV. Note that there are dual outputs on the CVD 7177 for Composite and S-Video - both are the same.

The PS/2 connector on the CVD 7177 is described in detail later in this manual.

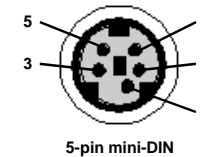
Connect the main power adaptor supplied with your unit into a wall outlet, but do not switch on yet, plug the other end in to the power jack on the back of the unit.

Before switching on make sure that all cables and connectors are properly attached and in their correct connectors.

Switch on your CVD 7177 followed by your computer and TV. As your computer starts-up, you should see an image on the TV and on the computer monitor - but check that you have the appropriate channel or 'AUX' selected on your TV. If no picture is seen, refer to the Troubleshooting section.

If your unit does not display color on the TV, it may be set to the wrong Video Standard (PAL or NTSC). See the earlier section on 'Front Panel Descriptions' for details on how to change this.

Do not worry if the image on your TV monitor is not central or some of the image looks like it may be missing, it just mean's you need to set your new unit up for use with your computer.



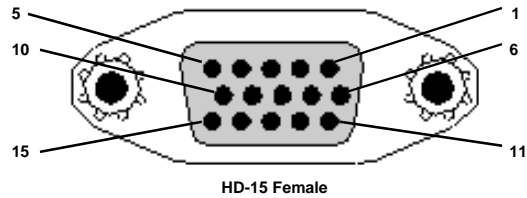
Pin	Use
1	RX - data sent from computer
2	Ground
3	CTS - clear for computer to send
4	TX - data sent to computer
5	RTS - request computer to send

\*RTS is always active, so computer is always allowed to send. CTS is ignored.

### **Power requirements**

- Consumes approximately 300mA @ 12v.
- Voltage requirements: minimum 12 volts DC, absolute maximum 16 VDC.
- Requires 'center-pin positive' 2.1mm DC power plug input.
- Reverse polarity protected, internal 1.6A fuse.
- Normal 'room temperature' is expected. Operation outside this temperature range is not guaranteed.

## RGB output



PIN	USE	PIN	USE	PIN	USE
1	Red 0.7v max. / 75 Ohms	6	Red ground	11	No Connection
2	Green 0.7v max. / 75 Ohms	7	Green ground	12	No Connection
3	Blue 0.7v max. / 75 Ohms	8	Blue ground	13	TTL Composite Sync through 1K
4	No Connection	9	+5V through 220 ohm	14	No Connection
5	No Connection	10	No Connection	15	Composite Video Output 1.0 Vpp

### Image Scaling & Positioning

- Proprietary scaling method
- AutoFit feature automatically scales computer image to fit TV
- Underscan & Overscan settings user-adjustable
- 2x Zoom & panning

### Image filtering

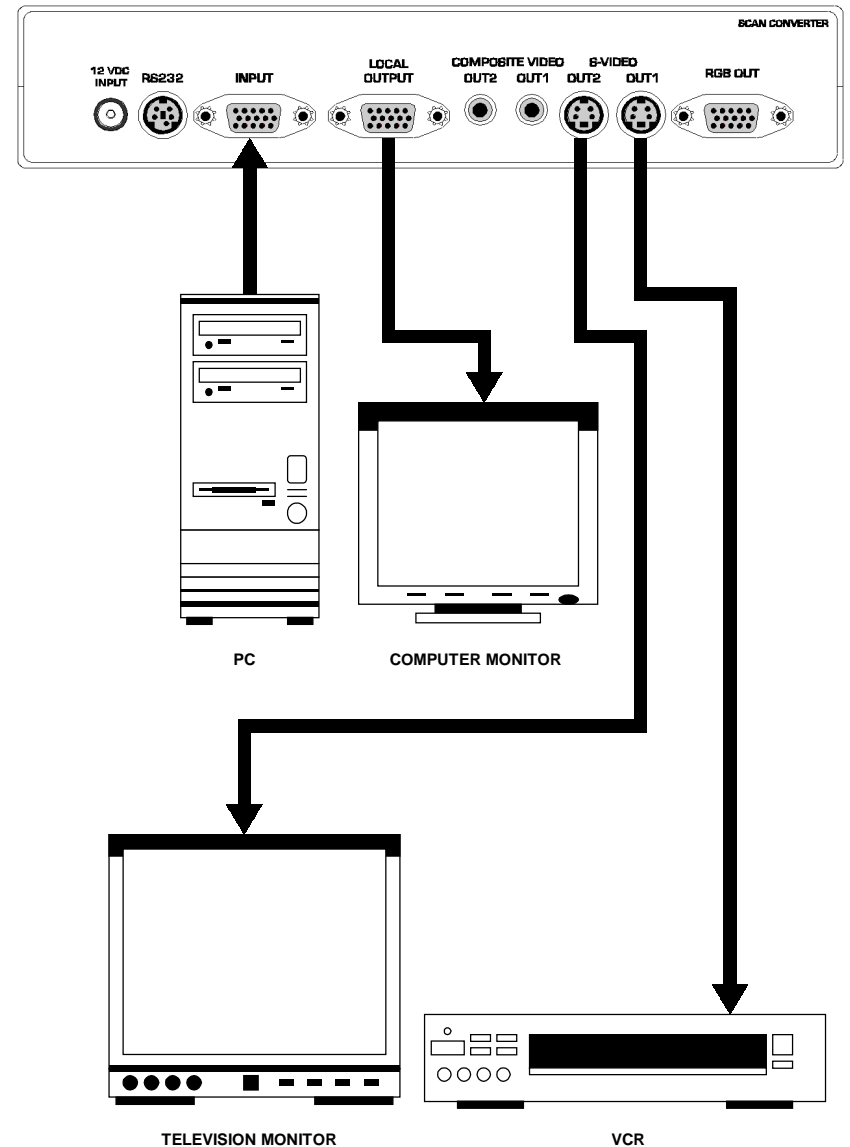
- Proprietary 2 or 4 line flicker reduction

### Control of unit

#### Control Methods

- Infra-red remote control supplied
- Control via front-panel keypad
- Control using OSD
- Control via RS232 port. Emulation of Microsoft® Serial Mouse via RS232 port.

## Typical Configuration



# User Instructions

## Keypad Control

The CVD 7177 can be controlled using the front panel keypad, in conjunction with the On Screen Display menu (OSD). This feature also allows access to information relevant to the current settings of the unit. The on-screen display times-out after about 25 seconds of user inactivity.

## Activating & Navigating the On-Screen Display (OSD)

Pressing the MENU button will activate the On Screen Display (OSD) function, presenting you at the start of the Menu Structure. The top line of the OSD is the menu name you are currently in, while the lower line will indicate what sub-menu is available, or the feature that can be altered.

Once in menu mode the buttons labeled [-] and [+] can be used for adjusting the various settings that will be displayed. Sub-menus (indicated by ... trailing the sub-menu text on the lower OSD line) can be entered by pressing the [+] button.

You can 'navigate' to the next feature by pressing the MENU button again. At the end of every menu or sub-menu list, will be an 'Exit...' option, and then '+' key will then exit back to the previous menu, or terminate the OSD.

## Flicker Reduction

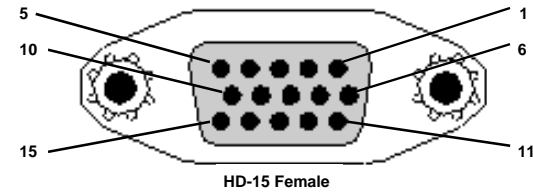
This button will toggle between 2 and 4 line flicker reduction modes. Depending on what you are displaying, the size of the image, fonts you are using and the computer image resolution will depend on what flicker reduction best suits your image

- 4-line filter will soften the image slightly but will retain most of the image detail and make the image more stable (this is also the units default setting). This is perfect for higher resolutions and CAD drawings.
- 2-line filter will sharpen the image but you might get a slight loss of fine image detail and some flickering. It may also improve the display when in Zoom mode.

# Technical Data

## Input

Input to the unit is via a 15-pin D-type socket



PIN	USE	PIN	USE	PIN	USE
1	Red 0.7v max. / 75 Ohms	6	Red ground	11	Ground
2	Green 0.7v max. / 75 Ohms	7	Green ground	12	ID 1, passed to PC monitor pin 12
3	Blue 0.7v max. / 75 Ohms	8	Blue ground	13	Horizontal Sync TTL
4	ID 2, passed to PC monitor pin 4	9	Passed to PC monitor pin 9	14	Vertical Sync TTL
5	Ground	10	Ground	15	Passed to PC monitor pin 15

## Resolutions

- Maximum 1024x768 with no line dropping in NTSC, 1280x1024 in PAL
- Absolute maximum resolution 1600x1200
- 24 bit compatible
- Approx. 24kHz to 100kHz horizontal scan rate
- Virtually any vertical scan rate accepted - horizontal scan rate is more important

## Synchronization

- Separate TTL-level HSync & VSync positive or negative going

## Outputs

### Signals

- Standard VGA 'loop-through' output to go back to monitor
- PAL & NTSC selectable
- Composite Video: 1 volt peak-peak on phono socket )
- S-Video: 1 volt peak-peak on 4-pin mini-DIN socket
- RGB 0.7v p-p on 15 pin D-type

- The lower the graphics resolution, the better the 'vertical' image quality. TV's have a fixed number of lines available for displaying pictures - for PAL it is 576, for NTSC it is 480, although some of these are off the top and bottom edges of the screen. So the more scan-lines a graphics resolution has (e.g.. an 800x600 resolution has 600 scan-lines), the more difficult it is for your CVD 7177 unit to squeeze all these lines into the limited number available on the TV. So lowering your graphic resolution will help improve image quality. (Remember to run AutoFit after you change the resolution)
- If you experience line dropping, use a higher Flicker Reduction setting. For lower resolutions like 640x480, you may need to reduce the Flicker Reduction setting.
- Cables and Connectors. Use good quality cables and connectors with your CVD 7177 unit and ensure that all connectors are properly connected to help maintain a high picture quality.
- Designing your Display or Presentation. When setting up an image for display or putting together your presentation, keep in mind that people might have to view it from a distance. Using a font that is well defined, graphics and pictures that are uncluttered will all add to the legibility of your display or presentation. Try to make text well spaced and larger than you normally use. Think about the colors you are going to use, colors that stand out from each other are better for viewing from a distance. As mentioned earlier choosing the right screen resolution will also add to the clarity and quality of your display. It is worth spending some time experimenting with different screen resolution and settings which will optimize your CVD 7177 unit to its full potential.
- Freeze function. This function is useful if you wish to change to another image or layout while maintaining an image on your TV monitor. Lets say that you wish to change from a program that is displaying text to a program that displays a graphic. Before you close the text display program freeze the image on the TV screen or screen's that you are using, you are then free to change to the graphic image program. Once this is done you can unfreeze the image on the TV screen which will then display your new image. The people watching the TV monitor would have seen the text image, followed by the graphics image. They would not have seen you close one program then open another.

## **AutoFit**

When 'AutoFit 0' is displayed, press the [+] button to start this function. The number will increment as the feature gradually progresses, ending in a high-pitched 'beep'.

## **Screen Size...**

This allows entry into a sub-menu (using [+] button), to set the SIZE and POS settings also found on the infra-red remote control.

### **Out H-Center - altering the display's horizontal screen position**

- Pressing the [+] button will move the image to the right, pressing the [-] button will move it to the left.
- Adjust until the image is centered horizontally on the screen.

### **Out H-Width - altering the display's width**

- Press the [+] button to increase the width of the picture and [-] button to decrease it.
- Adjust until the desired width of the image is obtained.

### **Out V-Center - altering the display's vertical screen position**

- Press the [-] button to move the picture up the screen and [+] button to move it down
- Adjust until the image is centered on the screen vertically

### **Out V-Height - altering the display's height**

- Press the [+] button to increase the picture height and [-] button to decrease it.
- Adjust until the desired height of the image is obtained.

You can cycle back around to any one of these adjustments by pressing the MENU button until the desired one is displayed again.

### **Exit**

- To exit these adjustments press the [+] button when 'Exit...' is displayed.

## **Info...**

This sub menu allows access to information relevant to the current screen resolution, and is used by the CVD 7177 to determine correct settings when converting from computer signals to a video output signal that will be displayed on a TV.

### **Total Lines - for information only**

- The number that appears here shows the total number of horizontal video lines that are outputted by the Computer per picture. This value cannot be altered, and is for information only.

### **Vert. Freq - for information only**

- This number indicates the number of pictures displayed by the Computer every second. This value typically ranges from 60 to 85Hz, but can go higher.

### **Exit**

Press [+] when Exit appears to exit back to the main menu function.

## **Hints and Tips**

The aim of this section is to help you exploit some of these applications and functions to get the best possible results from your unit.

- Use S-Video in preference to Composite Video, if your equipment has such an input. S-Video keeps the color and brightness in a video signal separate, whereas composite video requires extra filters to separate them electronically - these filters degrade the image.
- Don't forget the ZOOM. If you have problems reading the small text, then selecting the ZOOM mode will make things much easier, especially if using the Composite Video output. This is particularly useful for presentations.
- Zoom modes may require a different Flicker Reduction setting. Lowering the Flicker Reduction value may help to increase legibility of small text.
- If you don't wish to record the display, use an RGB cable to link directly to the TV. RGB cables, such as SCART in Europe, will send the signal directly to the TV's CRT RGB circuits - bypassing any color-decoding circuitry that tends to 'smudge' Composite Video or S-Video signals.
- The lower the graphics resolution and refresh rate, the better the image quality. All scan converters store the computer image to be converted to video in their own internal memory, and to do so the computer image has to be 'sampled' many times during each scan-line. Each sample stores one pixel of information in the memory. The number of samples taken is proportional to the image quality - i.e. the more samples the better. Higher graphic resolutions take less time to display each scan-line than lower ones, so it means that there will be more samples per line for lower resolution modes because there's more time for more samples to be taken - and hence will give a better image quality.

Total Lines	Read only	Returns number of lines in PC image - including vertical blanking lines.
Vert. Freq	Read only	Returns vertical frequency of PC image (to nearest 1Hz).
VGA Bot/4:	n	Tells the unit where the bottom of the image is within the PC signal. (divided by 4).
VGA Left:	n	Tells the unit where the left-hand edge of the image is within the PC signal.
VGA Store	n	Stores the VGA settings, so they are used in the future.
VGA Top/4:	n	Tells the unit where the top of the image is within the PC signal. (divided by 4).
VGA Width:	n	Tells the unit how wide the image is within the PC signal.
Video Std	NTSC, PAL	Sets the video standard
Zoom	Off, On	Turns zoom mode on and off

\*Where two text values are given (e.g. Off, On), the first relates to the setting used when '0' is sent to the unit, and the second relates to the setting used when '1' is sent to the unit.

## Manual Set...

This function should only be needed when AutoFit has failed for some reason, or the Computer image that you are using has a dark background which AutoFit cannot see. Please read the notes on AutoFit & Level adjustments in the Infra red Remote Control section before adjusting these parameters, in case something else will solve the problem.

With these adjustments you can manually set what area of the computer's image is to be used for display on your TV.

It is highly recommended that this mode is only used when in Under-scan mode, or you will not know if you've adjusted the values correctly. The 'VGA Store' option can be used to save your new settings in the unit's memory even after it has been switched off.

Follow the method listed below, pressing MENU between each step, to optimize your display:

### VGA Left

- Adjust this value using the [-] button until you notice that some of the image is lost, and then press [+] to come back one step.

### VGA Width

- Do the same for the right hand image, but this time press [+] until the image just starts to be lost, and then press [-] once.

### VGA Top

- Press the [+] button until the top edge of image is lost, or becomes discolored then press [-] once.

### VGA Bot (bottom)

- Press the [-] button until the bottom edge of image is lost, then press [+] once.

If you wish to go back and change any of the above adjustments press the MENU button until the desired adjustment is being displayed then [+] or [-] to alter it's setting.

### VGA Store

Press [+] once to store your new settings. They will now be remembered in the CVD 7177 memory even after the power is switched off.

### Exit

To exit these adjustments press [+] at this prompt, this will return you to the main menu structure.

## On-Screen Display Advanced Adjustments

They are accessed in the same way as the previous OSD features. Press the MENU button repeatedly until the OSD menu displays the message 'Advanced...'. Then press the [+] button to select the Advanced sub menu. Subsequent pressing of the MENU button will select the next Advanced menu feature to alter.

Any of these new settings can be stored using the 'STORE' button on the remote control.

### Advanced...

#### Video Std. - PAL/NTSC

- Adjust the unit using ([+]) button for PAL) or ([-]) button for NTSC) for your country's video standard. The image now being displayed on the TV monitor should be in color. (If your image is not in color and the correct video standard is being used, refer to the Troubleshooting section in this manual.)

#### Sense - 1, 2 or 3

- This is the level used when the unit performs an AUTOFIT - i.e. to find the picture edges. The default level is 2, but you may need to change this to 1 to improve the edge detection.
- Press [-] to reduce the number, and [+] to increase.

#### Infra Red On/Off

This function allows you to disable the Infra Red remote control for use with the unit.

- Then you can turn the Infra Red off by pressing the [-] button or on using the [+] button.

This is useful in situations where two units are used nearby, so that the infra red will not affect both if one has the Infra Red feature turned off. This feature is completely independent of the remote control's LOCK button.

Pan X Pos:	n	Adjusts Pan left/right position when in Zoom mode (higher value = Panned to the right).
Pan Y Pos:	n	Adjusts Pan up/down position when in Zoom mode (higher value = Panned to the bottom).
Reset	Off, On	On=does a reset to user settings. Automatically goes back to Off.
RGB Term.	Off, Auto	Auto=try to detect if monitor is attached, and terminate RGB appropriately.
RS232	Mouse, Control	If you change this to Mouse, RS232 commands will no longer function!
RS232 ID	0 to 255	Sets the unit's RS232 identification, where multiple units are controlled from one serial port.
Sense	1 to 3	Adjusts the AutoFit feature's sensing level
Sound	Off, On	Turns the internal speaker on or off.
Store Settings	Off, On	On=set the current settings as the user (power-on) default. Returns to Off automatically.

## Table of RS232 Commands

Adjustment	Values*	Comment
AutoFit	0 or 1	Set to 1 to initiate AutoFit
Baud Rate	0 to 191	Actual baud rate = $223722/(n+1)$
Buttons	Off, On	On=disable front-panel
Clock width:	2 to 3	Adjustment not recommended
DAC Ref.	5 to 25	Brightness level
Flicker Red.	2, 4	Lines of flicker reduction
ID Restrict	n	Restricts RS232 control only to those units which have RS232 ID already set to this value.
Image Freeze	Off, On	On=Image Frozen. Do not adjust any other settings when this is active.
Infra Red	Off, On	On=Infra red remote control is enabled.
Locked	Off, On	On=Disables all front-panel buttons and infra red remote control functions. If you Store this value, the only way out is a Factory Reset!
Overscan	Off, On	On=Overscan
Out H-Center:	n	Adjusts image left/right position
Out H-Width:	n	Adjusts image width
Out V-Center:	n	Adjusts image up/down position
Out V-Height:	n	Adjusts image height

### RGB Term. Auto/Off

If your image is too dark or too bright it might mean that the video signal from the computer is not being terminated properly. In most cases the CVD 7177 should be set to Auto which means that it will automatically detect whether or not a computer monitor is connected to the LOCAL OUTPUT connector on the back of the unit, adjusting itself accordingly.

- Press the [-] button to turn the termination off, and the [+] button to switch to automatic mode.

Keep the unit in Auto mode, unless you find that BOTH your computer and TV displays are dimmer than they should be - in which case turn the RGB Term. Off.

### RS232

The RS232 serial port can be used for either mouse emulation, or computer control of the unit, but not both at the same time.

- In order to use the Infra Red remote control to emulate a mouse, this RS232 adjustment must be set to 'Mouse' mode.
- Similarly, to use a serial link from the computer to control the CVD 7177, it must be set to RS232 Control mode.
- Note that the default is 'RS232' mode.
- Press the [-] button to switch to Mouse mode, or the [+] button to switch to RS232 Control mode.

### Baud Rate

In order to control the CVD 7177 from a computer it is necessary to set the same baud rate for both the unit and the controlling computer. The CVD 7177 does not display the actual baud rate, but rather a number relating to it. The table in a later section on 'RS232 Computer Control' shows which Baud rate each number relates to. For example: to set to 9600 Baud the number would be set to 22.

- The CVD 7177 default settings are "9600,N,8,1" - i.e. no parity is used, 8 data bits are required, and 1 stop bit.
- This number is only used in RS232 'Control' mode. 'Mouse' mode ignores this number, and always uses 1200 baud.

Press the [+] and [-] buttons to change the required number.

### Sound - on/off

This provides a simple way of turning sound on and off on the unit.

- Press [-] to turn sound off, and [+] to turn it back on again.

**RS232 ID**

Many units can operate off the same RS232 connection, and this setting provides an ability to control each unit independently. Set this value to a different number on each unit (from 0 to 255), and read the instructions later on how to use it. The default value is 0.

**Clock Width - 2 or 3**

It is not advisable to change this unless instructed by an engineer. The default value is 3.

**Exit**

Press [+] to return to the main menu.

Table of commonly used baud rates:

Baud Rate	#	%Error
115200	1	3%
57600	3	3%
38400	5	3%
28800	7	3%
19200	11	3%

Baud Rate	#	%Error
14400	15	3%
<b>9600*</b>	<b>22*</b>	1%
4800	46	1%
2400	92	1%
1200	185	0.2%

\*22, Baud rate = 9600 is the default setting.

Note that the %Error of 3% on some settings should not normally cause a problem.

- Not all the commands available are listed within the OSD menus. See the table for a complete list of commands available.

### **Restricting RS232 commands to certain units**

If you have a number of units all connected to the same PC's serial port (i.e. running in parallel), then you can use the RS232 ID feature to restrict certain commands to go to only certain CVD 7177 units. The following points outline this method:

- Make each 'RS232 ID' setting unique to each CVD 7177, unless you want two or more units to respond to the same commands, in which case make them the same ID value. The default value is 0.
- Send the command 'ID Restrict nnn' where nnn is the number of the CVD 7177 unit you wish to control (from 0 to 255).
- Follow this with whatever commands you wish to send. Units where 'RS232 ID' is not identical to the 'ID Restrict' value will not respond to or acknowledge these commands.

To disable this feature, you have to make the RS232 ID the same on all units (recommended value 0), and of course set 'ID Restrict' to this value.

### **Changing Baud Rates**

Details on how to change the Baud rate are in the Advanced Features section of this manual, but the relationship between number and baud rate is given in the table below.

Any number up to 191 can be selected, but only certain Baud rates are generally used. The most common ones are outlined in the table below. For numbers not included in the table, the baud rate associated with those numbers can be found by using the following equation:

$$\text{Baud} = (223722) / (\text{Number} + 1)$$

So to obtain the relevant number to be used:

$$\text{Number} = (223722 / \text{Baud}) - 1$$

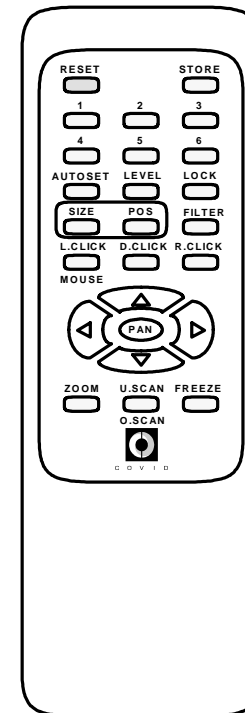
## **Using the Infra Red Remote Control**

By now you should have the unit powered up and working with your computer and TV. If you don't get an image on your TV, please refer to the Troubleshooting section at the back of this manual.

This unit has been designed for ease of use, and you should find most of the controls simple to understand and apply. Some features such as Brightness Control, require more than one button press on the remote control, but this has only been done to reduce the number of buttons required to operate the unit.

If at any time you find that the remote control or front panel buttons are not working, then you may have inadvertently pressed the LOCK button on the remote control. Lock mode is indicated by the Power LED on the unit flashing - see later for a description of how to turn this feature on and off.

### **Infra Red Remote Control**



## **RESET**

As its name implies, this resets the unit back to the last-saved user settings. It is useful if you want to clear any changes made to screen size or position. If you've saved an invalid setting to the non-volatile memory, you may want to do a Factory Reset - as described in the Front Panel Keypad section.

## **STORE**

This button is used for saving new settings to the unit's memory and will be remembered even after the unit has been switched off. Just about all feature settings can be saved - e.g. Zoom mode and position. Note that Button Lock can be saved, but Remote Control Lock cannot.

A high-pitched beep will be heard when this function is complete.

## **U.SCAN / O.SCAN**

(Underscan / Overscan.) Pressing this button will toggle you between Underscan and Overscan modes.

- Underscan (sometimes known as Compress mode) will leave a border around your image.
- Overscan has no border and the displayed image (when set correctly) is larger than your TV monitor screen.

This function is also available via the front-panel button labeled 'O/SCAN'.

The position and size of the image in both modes are user-adjustable, and the method of doing so will be described later under the SIZE and POS functions.

## **FREEZE**

The Freeze function allows you to freeze the current image on the screen, and all the settings of the unit itself. Pressing the freeze button again will unfreeze the image.

Note that the freeze function will only freeze the image on the TV monitor - the image on the computer monitor will not be effected by this function and will carry on displaying images as normal.

No other features are accessible while in Freeze mode, with the exception of RESET. This function is also available via the Front-Panel button labeled 'FREEZE' on the unit itself.

E.g. type in:

Flicker Red=2

followed by Return.

The CVD 7177 will reply with '>' to confirm that the command has been received, understood and executed.

To find out what the current setting of a function is just type the name of that function and press Enter (i.e. without the = sign).

E.g. type in:

Flicker Red

followed by Enter.

The unit will return with the current setting (either 2 or 4).

## **Responses to commands**

The response from the CVD 7177 can be one of three things:

- ? if something is not understood, e.g. an adjustment name is misspelled;
- > if the command has been executed;
- nnnnn (i.e. a five digit number from 0 to 99999, followed by a CR and LF) if a setting value is returned.

## **Notes on sending commands**

- Settings that are one of two values (e.g. NTSC or PAL), have to be sent as 0 or 1. 0 corresponds to the Off or '-' state, and 1 corresponds to the On or '+' state.
- You only have to send a maximum of 4 characters in order for the command name to be recognized - e.g. "Flicker Red = 2" could be shortened to "Flic = 2".
- Spaces and line-feeds (ASCII code 10) are completely ignored.

The case is ignored (i.e. you can use upper case or lower case). You must always send a carriage-return (ASCII code 13) at the end of your command or value request.

- The CVD 7177 response should at most be within 20ms of the receipt of the carriage-return character. But of course delays due to slow baud rates will play a greater part than this.
- The CVD 7177 input buffer is limited to 32 bytes, so do not send any more characters (including CR, LF, etc.) than this.
- For more information on controlling the different functions see the relevant sections earlier in this manual.

# RS232 Computer Control

## Set-up

All of the functions for the CVD 7177 can also be controlled via a computer using the RS232 port on the unit. The supplied RS232 sharer serial lead and a Terminal emulation program on the computer. Alternatively, the unit can be controlled from your own software, provided that you have skills and resources to set up a serial communications port in the programming language you are using.

The CVD 7177 uses the following settings on its communications port

- 8 bit data, no parity, 1 stop bit
- No flow control
- Set the Baud rate on the computer and the CVD 7177 to the same value (usually 9600).

Instructions on how to set the above port settings can be found within your own systems help file or the help file of the software you wish to use in sending commands.

The following method is based on using a terminal emulation program.

## Sending commands

- First open the terminal program you wish to use and set the desired port to the settings listed above. You may need to set "Echo" on, to see what you are typing.
- Ensure that you have the CVD 7177 RS232 sharer cable linked from the same serial port that you have set up to the back of the unit. Note that this must be different to the mouse port used.
- To alter any setting you see displayed on the On Screen Display simply type in the name of that setting (e.g. 'Flicker Red') followed by a '=' and then the new setting number or value (e.g. '2').
- If you make a mistake with what you are typing (i.e. your text does not match one of the internal messages in the CVD 7177), then a '?' will be shown next to the offending character.
- Pressing Enter at the end of the text will make the CVD 7177 act on the command you have given it.

## AUTOFIT

This is a powerful feature of the CVD 7177. Once activated this feature will scan the incoming computer image to determine its size and position - thus optimizing it for display on the desired TV unit.

When your unit first encounters a new screen resolution or refresh rate, it will make a guess on how best to display this on a TV. Sometimes, the guess needs 'refining', and this function makes the unit itself search for the image edges to improve on this.

- Before running the AutoFit function, set your computer so that it is displaying a light colored background or wallpaper with defined edges in full screen mode. If you have Windows-based operating system, make sure it is maximized to use the full screen.
- If you are running MS DOS environment, it is only recommended to use this function when the full DOS screen is being used by a fairly bright color or shade of white.
- Only use this feature when the full area of the computer screen is being used - this will ensure that the unit 'sees' the edges correctly, and performs its task without errors.

If you encounter problems when running AutoFit you can adjust the level at which the AutoFit works - see the LEVEL button described later.

- Once complete, the AutoFit routine will remember this particular resolution and refresh rate so that you should not need to re-do this function. The only exceptions are if you change the setting of the computers screen resolution, do a Factory Reset or use this unit with a different computer.
- If the AutoFit feature does not look like it is finding the edges of the display correctly, then you can press RESET to stop it going any further.

A high-pitched beep will be heard when this function is complete.

## FILTER

This button will toggle between 2 and 4 line flicker reduction modes. Depending on what you are displaying, the size of the image, fonts you are using and the computer image resolution will depend on what flicker reduction best suits your image

- 4-line filter will soften the image slightly but will retain most of the image detail and make the image more stable (this is also the units default setting). This is perfect for higher resolutions and CAD drawings.
- 2-line filter will sharpen the image but you might get a slight loss of fine image detail and some flickering. It may also improve the display when in Zoom mode.

## **SIZE & POS**

These buttons allow you to adjust the Underscan or Overscan size and position on the TV (whichever is currently selected). You can then use the arrow keys to adjust the horizontal and vertical size or position of the image being displayed.

Please note: you should ideally have done an AutoFit before making these adjustments, so that the unit knows the size of the "incoming" computer image.

- The CVD 7177 units have 2 modes of display as mentioned earlier (Underscan or Overscan). So it is important to have the correct one selected before proceeding to change the values. The 'O/SCAN' green LED will be lit in Overscan mode - i.e. when the image should fill the screen. Underscan modes should always be adjusted to leave a slight black border around the image.
- Only SIZE or POS is active at any one time, but you can easily switch from one to the other.
- The values are also separately stored for NTSC and PAL outputs - adjusting one will not affect the other.
- Once adjusted, STORE the setting for future use.

Note that you are setting the screen size for one particular TV (the one you are watching the results on), and the size may appear different on another TV. This is not a fault with the unit, but merely demonstrates that no two TVs are exactly alike.

## **ZOOM**

This function allows you to view a section of the video image at twice the normal size, and is useful for showing computer images and programs in more detail. This could be useful in training applications.

Enter the Zoom function by pressing ZOOM on the IR remote control. Pressing ZOOM again will return you to the normal viewing size.

- You can then 'pan' around the image by using the arrow keys to slide the image around.
- It is possible to STORE this setting to make the unit start-up (from power on) in Zoom mode, and in a particular pan position. This may be useful for certain applications - such as video conferencing when using a video-in-a-window card.
- You can adjust other settings while in Zoom mode.

NOTE: You may need to press the PAN button to restore control over the Zoom position, after adjusting other settings.

## **Using the mouse emulator**

The CVD7177 uses the computer's standard mouse driver saving the need to load additional software, just turn your computer on with CVD 7177 attached as described above.

- You can use the four arrow buttons to move your mouse pointer around the screen.
- L.CLICK (left click) has the same function as a single left click of a standard mouse button.
- D.CLICK (double click), has the same function as a double left click of a standard mouse button.
- R.CLICK (right click), has the same function as a single right click of a standard mouse button.

## **Toggling Zoom/Pan and Mouse modes**

Both the Pan feature and Mouse emulation feature can be used at the same time, and you can toggle the arrow-key usage by pressing the PAN button on the remote control.

- If you find the arrow-keys not controlling the mouse pointer, simply press PAN once to de-select PAN mode.
- Similarly, to re-activate PAN mode (to slide a zoomed image around the screen), press PAN again.

# Mouse Control

The CVD 7177 has an RS232 communications port that can be made to emulate a Microsoft® Serial Mouse, and all the features are controlled from the infra-red remote control. This section details how to setup and use this feature.

## Hardware setup

Setup of this feature requires the connection of the RS232 sharer supplied with this unit:

- Disconnect your mouse's 9-pin 'D' connector from the back of the computer.
- Connect the supplied RS232 sharer lead from the 5-pin min-DIN 'RS232' connector on the back of the CVD 7177 to the now empty mouse port on the computer.
- Reconnect your mouse to the spare connector on the supplier RS232 sharer.

## CVD 7177 setup

Make sure that RS232 mode is set to Mouse (and not 'Control') within the Advanced menu of the On-screen Display.

## ZOOM

This function allows you to view a section of the video image at twice the normal size, and is useful for showing computer images and programs in more detail. This could be useful in training applications.

Enter the Zoom function by pressing ZOOM on the IR remote control. Pressing ZOOM again will return you to the normal viewing size.

- You can then 'pan' around the image by using the arrow keys to slide the image around.
- It is possible to STORE this setting to make the unit start-up (from power on) in Zoom mode, and in a particular pan position. This may be useful for certain applications - such as video conferencing when using a video-in-a-window card.
- You can adjust other settings while in Zoom mode.

NOTE: You may need to press the PAN button to restore control over the Zoom position, after adjusting other settings.

## LOCK

Pressing this button once will disable your unit's front panel keypad. To re-enable the front panel keypad, simply press the LOCK button again. This setting can be STORED, to prevent people from adjusting the unit without the remote control.

Pressing the button twice (within 1.5 seconds of each press) will lock both the front-panel keypad and the remote control - use with care! This setting cannot be stored, because of course the remote control is disabled by this time.

- The Power LED will flash slowly when the front-panel keypad is disabled.
- The Power LED will double-flash when both buttons and remote control are disabled.
- Remove and restore power to the unit to bring the remote control back to life.
- The Factory Reset method (described in the Front-Panel section) will still work.

This feature is intended for use where the settings of the unit should not be disturbed - eg. in an educational environment, or at an exhibition.

## **LEVEL**

This button allows internal settings to be adjusted, by subsequently pressing a number button (within 1.5 seconds), and then the up/down arrow-keys to adjust the level itself.

- LEVEL 1 will adjust the brightness of the image coming from the unit. This is very useful to match this unit's brightness with that from a video player, thus preventing the need to adjust the TV when changing from displaying computer graphics to playing a video tape.
- LEVEL 2 - will adjust the AutoFit sense level, from 1 through to 3. A lower setting (using the down arrow-key) will allow darker image edges to be detected. The default is 2. If after running AutoFit you are left with a image that is too big for the TV screen, it may be because the image is too dark and the unit cannot find the edges of the picture. Altering the sense setting will change the brightness needed for the unit to find the correct edges satisfactorily.
- Run AUTOFIT after changing the sense setting to ensure a good image on the TV.

E.g. Press LEVEL followed by 1, and then adjust the picture brightness with the up and down arrow keys.

This feature times-out after about 10 seconds to prevent further accidental changes.

## **MANUAL SET**

This function should only be needed when the AutoFit has failed for some reason, or the Computer image that you are using has a dark background which AutoFit cannot see. Please read the notes on AutoFit & Level adjustments in the Infra-Red Remote Control section before adjusting these parameters, in case something else will solve the problem.

With these adjustments you can manually set what area of the computer's image is to be used for display on your TV.

It is highly recommended that this method is only used when in Underscan mode, or you will not know if you've adjusted the values correctly.

- Press AUTOFIT on remote control twice (within 1.5s) - two 'beeps' will be heard.
- Adjust Top and left-hand edge by pressing the arrow keys.
- Press AUTOFIT again.
- Adjust Bottom and right-hand edge by pressing the arrow keys.
- Press AUTOFIT - this will give a high beep to indicate that this has been saved.

Manual set mode times-out after 20s - ignoring any settings.