DeltaScan &
DeltaScan Pro
Instruction Manual

V4.00

DeltaScan & DeltaScan Pro Introduction

By linking the DeltaScan or DeltaScan Pro between your computer and your VGA monitor, and connecting a 12v power supply, a video signal can be taken to a television or video - for display or video recording.

Features common to both DeltaScan and DeltaScan Pro

- VGA/SVGA/XGA (24bit compatible) input
- Converts to Composite/S-Video/RGB/UHF (UHF optional).
- Recommended for resolutions up to 800x600, but can go higher.
- Adjustable overscan/underscan settings.
- Infra-red remote control of all functions.
- Freeze facility.
- Two-level flicker reduction control.
- Horizontal & vertical picture size and positioning adjustments.
- Internal non-volatile memory remembers picture size/position settings.
- Macintosh compatible for resolutions of 640x480 and above.
- Proprietary digital processing gives high quality 21 bit image.
- All functions can be computer-controlled from within Windows or DOS.
- Colour sub-carrier locked to line frequency, thus reducing 'dot-crawl'.
- Supplied with Computer, Composite Video & S-Video leads.

Additional features on DeltaScan Pro

- Contains twice as much picture memory, giving a higher quality image.
- Supports interlaced computer graphic resolutions.
- Capable of working at almost any resolution, but only recommended up to 1600x1200 (interlaced).
- Zoom (x2) with Pan.
- Zoom and Pan settings can be held in non-volatile memory.
- YUV output.
- Also supplied with RGB to SCART lead.

Credits

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Telephone: 01843 873300 FAX: 01843 873301
Designed and Manufactured in the United Kingdom.

Hardware and Software designed by R.P.D.Mallett.
DeltaScan Instructions release 4.00 January 1997 by R.P.D.Mallett, with thanks to A.S.J.Mallett.

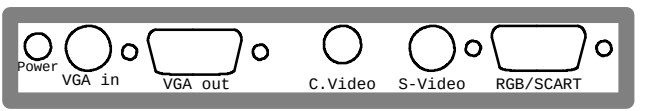
Disclaimer

Identifying the hardware

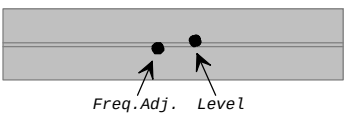
Checklist

1. DeltaScan or DeltaScan Pro box.
2. Computer lead. This is a short lead consisting of a 'VGA' style 15 way plug on one end (with pin 9 missing), with a 8 pin 'mini-DIN' plug on the other.
3. Composite Video lead and S-Video lead.
4. RGB to SCART lead (DeltaScan Pro only).
5. UHF lead (only for unit with optional UHF output).
6. Mains adaptor. If you have not purchased a mains adaptor with this unit, you will need to use one with the following specification: 12volts DC, minimum of 300mA, 2.1mm DC power-plug with centre pin positive.

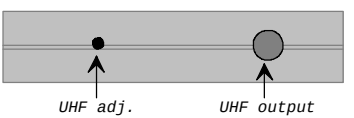
Front of DeltaScan & DeltaScan Pro.



Back of DeltaScan & DeltaScan Pro.



Right-Side of DeltaScan & DeltaScan Pro.



Left-Side of unit with optional UHF output.

Connecting the hardware

Connecting the DeltaScan unit to your computer could not be easier! Since there's no software to run, setting the unit up is as simple as connecting some cables and making sure your TV or video is switched to the right input.

First: Switch off power to all equipment

Connection to your computer

Dis-connect the VGA monitor from the computer's VGA output, and use the supplied computer cable to link from the computer's VGA output to the round connection marked 'VGA in' on the unit.

Re-connecting your VGA monitor

Plug your existing VGA monitor into the connector marked 'VGA out'. This will let you use your VGA screen as before, even when there's no power connected to the unit.

Connecting the video outputs

The unit can drive several different outputs:

1. Composite Video - for linking to domestic TVs or VCRs via the (normally yellow) 'Video In' phono socket. NB. This output will not connect to an aerial input.
2. S-Video - for linking to S-VHS or Hi8 recorder decks. This will give far superior results than the Composite video output, but not all equipment has such an input.
3. RGB - for connection to a TV's SCART plug, or video projector. NB. cable only supplied with DeltaScan Pro.
4. UHF - *optional* output for connection to any UHF television.

Connecting a mains adaptor

The DeltaScan and DeltaScan Pro both require a 12v DC minimum 300mA power supply - see 'Technical Specifications' for further information on suitable power supplies. Plug the mains adaptor into a mains outlet, and plug the round 'DC power plug' into the 'DC In' socket on the DeltaScan. (Note that there is no on/off switch on the DeltaScan.)

Turning on

Make sure you've connected all leads, and your equipment is turned on. Your VGA screen should function normally, and any connected video monitors or TVs should now show a similar signal. If you do not get what you expect:-

1. If there's a picture, but the wrong shape or position, please continue through this manual - everything is working fine, but just needs slight adjustment by using the remote control.
2. If there's no picture at all, then are you sure there's power to the unit? If the red 'Status' LED is not on, then you've not connected the mains adaptor correctly.
3. If there's no picture and the 'Status' LED is on, then check:

   a) all connections;

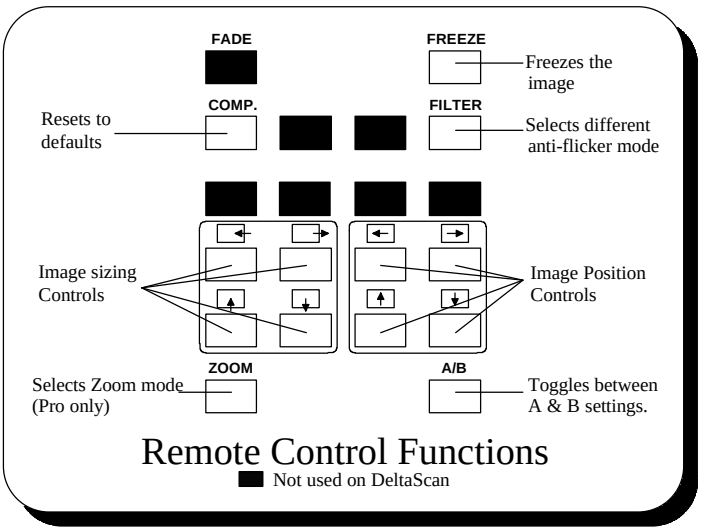
   b) that your TV or video is connected to the right output from the unit;

   c) that your TV or video has the right input selected (for example AV, or channel 0) - as it is likely that it will default to the aerial input, and may be not the one that you have plugged the output of the unit into.

   d) if you still have no image, then please refer to the Problems? section at the back of this manual before contacting Technical Help.

Using the DeltaScan

The DeltaScan range could not be easier to use - it's active as soon as it's connected. All functions of the DeltaScan are controlled using the infra-red remote control provided. In use, you should always point it directly at the unit within a range of about 4m.



Screen Adjustments

The DeltaScan and DeltaScan Pro are unique, in that they allow the user to customise the screen size and position to exactly suit the display being used. It is often the case that different computer graphic cards, or different televisions will display a picture that is slightly 'off-centre' - perhaps too far to the right or left, for example - and the adjustments that the unit allows will compensate for such differences.

The following sections cover the adjustments that can be made using the remote control. All changes made (except Freeze, Filter, and A/B) are stored in non-volatile memory (ie. memory that is not lost when power to the unit is removed). Adjustments are also specific to individual screen resolutions, so you won't need to constantly alter screen position for different programs - once set up for your needs, it will remain so.

Defaults

Default screen size and positioning adjustments are pre-programmed into the internal memory for a variety of standard screen modes. However, it is quite possible that it will not know about a screen mode that your graphic card outputs, and for these resolutions you will have to adjust the display until it is correct - but you should only need to do so once!

Screen positioning adjustment

Use these buttons to control the position of the image on your TV. If you try and move the image too far, it will jump to the other side of the screen (eg. move too far to the left, and it will jump back to the right).

Screen size adjustment

These buttons change the height and width of the display. They should be used in conjunction with the screen position buttons to adjust the display to your needs. Eg. making the screen wider will probably require you to move the screen to the left slightly as well. If you try and make the image too tall, the image may become unstable - in which case you should reduce the image height until it becomes stable again. Note that Screen size adjustments are disabled when in zoom mode. Like the positioning controls, these adjustments will 'wrap-around'. See the section 'Getting the best possible picture' for more information.

Freeze

Pressing this button will light up the Freeze LED, and prevent the TV image from changing. When active, only the FILTER button will have any effect on the picture. Press again to put things back to normal.

A/B - (Underscan/Overscan)

This button gives you the ability to store two different size, position and zoom (Pro only) settings for each screen resolution, with the 'A/B' LED coming on when the 'B' setting is selected. In most cases, this will be for 'Underscan' and 'Overscan'. Overscan is where the display image is made slightly too large for the TV set, with the result that you no longer have a black border round the edge. Underscan is a setting where you still have the border, much as you would see on a VGA screen.

Alternatively, you can use the A/B feature to store other screen size/position settings - including, for example, one that uses the zoom feature, so that pressing the A/B button toggles between normal mode and a zoom mode.

It is recommended that the 'B' mode is used for storing the overscan and zoom settings.

Zoom (on Pro version only)

Press zoom to get a 2x 'blow-up' of your computer image on the TV set. The screen positioning buttons will control the area being zoomed. Press Zoom again to put things back to normal. Note that your image may now be offset - but this can be avoided by using the A/B feature, with your normal image position/size stored in 'A', and your zoomed position/size stored in 'B'.

Filter

This button toggles between two different 'flicker reduction' modes. The first offers a high-quality image with slight flicker, and the second produces a lower-resolution image with no flicker at all. Note that some screen images will flicker more than others, and that the 'perceived flicker' can depend on your TV set's brightness and contrast settings - and will also vary between different TVs. See the section 'Getting the best possible picture' for more information.

Comp.

Pressing this button will set the unit back to its 'power-up' defaults - ie. Freeze off, 'A' mode, and high-quality filter. This button is useful as a quick way of resetting the unit.

Hardware adjustments available

See diagram in the section 'Identifying the hardware'.

'Freq.Adj.' - Colour sub-carrier frequency adjustment

This adjustment allows control of the 'colour sub-carrier' frequency, and should only be altered by an electronic engineer with the right equipment.

'Level' - VGA image clip level.

This adjustment is similar to a brightness control, but will also clip colours that are too bright to the maximum brightness level. If this is set wrongly, then certain colours such as yellow may appear washed out, or even come out as white. This adjustment is factory set, and should not normally need altering.

For units with the optional UHF output:

UHF Adj.

This adjustment is for optimising the UHF display on a TV. Make sure the TV channel is 'auto-tuned' to the UHF output first, and then try adjusting this output for the best picture. Be careful not to make the picture too bright - so only make the adjustment whilst using a program with a wide range of colours (eg. Windows Paintbrush). Note that the UHF output will never be as good as the other outputs available, and should only be used for connecting to a TV with no other suitable input.

Installing the DeltaScan DOS/Windows Control Software

The DeltaScan DOS Control Software allows control over the DeltaScan unit from your keyboard - all the remote control buttons are duplicated using special 'Hot-keys'. The DeltaScan Windows Control Software presents a remote control on your screen, which behaves exactly like the remote control unit provided.

README file

The supplied disk may have a README file on it, which would contain any information that has changed since this manual has been released. It would also detail any changes to the software not mentioned in this manual. To view the README file (if there is one), simply load it into the Notepad program (which you'll find in your Windows' Accessories group), or use the TYPE command to view it from DOS.

Software Installation

1. The software installs using Windows, so first run Windows.
2. Put the supplied software disk in drive A: (or B:).
3. Select 'Run' from the 'File' menu from 'Program Manager'.
4. Type A:SETUP (or B:SETUP) in the box, and click on OK.
5. Follow the instructions that follow (if any). The supplied software uses 'Visual BASIC', and you may be asked to close other software that is programmed using this language during installation.
6. The Program Manager window may change size - simply click on the maximise button to correct this.
7. Once completed, you may move the icon to another window group for ease of use.

If you don't want to use Windows.....

Then simply copy the DMKEY.COM program from A: into your computer's C:\ directory (or somewhere pointed to by the PATH setting).

DeltaScan Control Software

Windows Control Software

The DeltaScan Windows Control Software lets you control your DeltaScan unit from Windows.

Running the software
Simply double-click on the DeltaScan Control icon.

Controlling the DeltaScan
It's as easy as using the remote-control - because the software resembles the remote control! See previous section on 'Using the DeltaScan'.

DOS Control Software

The DeltaScan DOS Control Software lets you control your DeltaScan unit from 'hot-keys' in most DOS programs.

Running the software
A 'TSR' (Terminate and Stay Resident) program is used. To run it, simply make sure that the DMKEY.COM program is in your hard disk's root directory (ie. C:\), and type

DMKEY

A message similar to:-

DOS Control Software Installed
(c)1990-1996 Vine Micros Ltd
Version 1.30 RPDM ASJM

... will appear, confirming that the software is installed correctly.

You can run the program at any time from the DOS prompt - even from within a Windows 'MS-DOS Prompt', but remember that the keys will only work whilst you are in the 'MS-DOS' Prompt that it was run from.

Function	'DMKEY' Hot-Key	'DMCOMM' Command	Code (dec)
Move screen left	ALT <left-arrow>	LEFT	10
Move screen right	ALT <right-arrow>	RIGHT	11
Move screen up	ALT <up-arrow>	UP	14
Move screen down	ALT <down-arrow>	DOWN	15
Make screen narrower	ALT Delete	SIZELEFT	8
Make screen wider	ALT Ins	SIZERIGHT	9
Make screen shorter	ALT PageUp	SIZEUP	12
Make screen taller	ALT PageDown	SIZEDOWN	13
A/B setting	ALT A	AB	20
Freeze/Unfreeze	ALT F	FREEZE	17
Filter (Sharpness)	ALT S	FILTER	3
Zoom (Pro only)	ALT Z	ZOOM	18
Resets to defaults.	ALT C	COMPUTER	0
Disable ALT keys	ALT <TAB>	KEYDISABLE	N/A
Enable ALT keys	ALT <TAB>	KEYENABLE	N/A

Table of methods of controlling the hardware.

Controlling from other software

All the remote-control functions can be also be simulated from your own software, via either a 'Dynamic Link Library' (for Windows software) or a TSR driver (for DOS software). The (rather technical) information below gives details on how to do this.

Control from your Windows Applications

int VMDMSendCode(int code)

... is available in the DLL file 'VMSCNT3.DLL'. This function can be declared in a Visual Basic 'Declaration' section, or called from other software (eg. C++). See the previous table for the control codes to use.

Control from DOS Software

First run DMKEY.COM. This program supports an interrupt call that can be used to control the units. Then either:

- MOV AX, code
  INT 066 (hex.)
  ... to control the unit with the codes listed previously; or
- Run DMCOMM followed by a comment word (or list of words). Eg. DMCOMM FREEZE

Notes on control methods

1. Codes listed are in decimal.
2. Codes take approximately 0.25 seconds to send, during which time all interrupts are disabled.
3. Code 0 resets the unit to 'power-on' settings - however, no screen size or position adjustments will be affected.
4. The above codes, like the remote control, act as 'toggles'. To ensure that FREEZE is on, first 'Reset' (using code 0) and then 'FREEZE'.
5. You are free to distribute (but not alter) the files VMSCNT3.DLL, DMKEY.COM, DMCOMM.COM with your software for the purpose of controlling the hardware.

Getting the best possible picture

The DeltaScan and DeltaScan Pro are highly sophisticated scan-convertors, and have been developed from Vine Micros' 7 years of experience in computer to video conversion. As with all high-technology equipment, knowing how a device works will often let the user get more out of it, and this is the purpose of this section. Whilst no circuit diagrams will be given, useful information and tips will be.

Tips

1. Use S-Video in preference to Composite Video, if your equipment has such an input. S-Video keeps the colour and brightness signals in a video signal separate, whereas composite video requires extra filters in the DeltaScan and in the TV or Video to separate them electronically - and these filters degrade the image.
2. Use the VHF/UHF output (optional) only as a last resort. UHF signals require far more filtering and processing than other signals, and as such will give poorer results.
3. Don't forget the ZOOM (on the Pro version)! If you're having problems reading small text, then selecting ZOOM mode will makes things much easier - especially if you're using the Composite Video or VHF/UHF outputs (optional).
4. If recording to video, use the higher-quality FILTER mode. This is because some video recorders will not work well with non-interlaced video signals - and may even give broken up pictures.
5. A slightly different vertical size or position may greatly reduce flicker in DOS text modes. By changing the vertical size or position slightly (up or down), you may be able to match the pixel spacing and design of the DOS text font.
6. If you are using the DeltaScan Pro, and if you don't want to record the display, always use the SCART cable provided to link directly to the television. The SCART cable will send the DeltaScan Pro's RGB signal directly to the TV's RGB input - bypassing any colour-decoding circuitry that tends to 'smudge' Composite Video or S-Video signals. Non-Pro versions will benefit only slightly by using a SCART cable, which is an optional extra.
7. The lower the graphics resolution, the better the 'horizontal' image quality. All scan convertors store the computer image to be converted to video in their own internal memory, and to do so the graphics card's signal has to be

sampled many times during each horizontal scan-line. Each sample stores one pixel of information in the memory. The number of samples taken is proportional to the image quality - ie. the more samples the better. The DeltaScan takes a fixed number of samples per second, but since higher graphic resolutions take less time to display each scan-line than lower ones, it means that there'll be more samples per line for lower resolution modes - and hence lower resolutions will give a better 'horizontal' image quality.

8. The lower the graphics resolution, the better the 'vertical' image quality. TVs have a fixed number of lines available for displaying pictures - for PAL it is 576, and 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 (eg. an 800x600 resolution has 600 scan-lines), the more difficult it is for the DeltaScan to squeeze all these lines into the limited number available on the TV. The result is that for high resolutions, there will be line-dropping - which is usually only noticeable on very small text.
9. Interlaced modes give better image quality than non-interlaced modes of the same resolution. This is because interlaced modes have a lower horizontal line frequency than their non-interlaced equivalents, and as such there will be more 'samples' per line (see Tip 1), resulting in a higher quality image.

Problems?

Use this section as soon as you have a problem. Should none of the suggestions below help, please contact Customer Services at the number listed at the beginning of this manual.

The 'Power' LED does not come on.	Check that the mains adaptor is connected properly and turned on, and that its polarity is correct (if it has a polarity-reversal switch).
There's no output from the unit.	First check that the power LED is on (see above). Check that the unit is responding to the remote control (eg. press FREEZE, and see if the LED comes on). If not, then the unit may be faulty, or the remote control batteries need replacing. If it does respond, then check all connections from the unit to your TV/Video, and that the TV/Video is correctly set up (eg. the right channel selected, or AUX or A/V pressed, etc.).
The unit does not respond to the remote control	The 'STATUS' LED should flicker when the DeltaScan detects infra-red data (even from other remote controls). If it is not flickering, then you may need to replace the batteries in the remote control. Remember that when the FREEZE LED is on, most remote control buttons are disabled.
The DOS Control Software does not control the unit.	Are you sure that DMKEY has been run correctly? Have you accidentally disabled the keys using ALT-TAB? (If so, just press ALT-TAB again to restore the key functions). Some programs disable TSRs that use 'Hot-keys'. In these cases they will have no effect, and unfortunately nothing can be done - use the remote control instead.
I get excessive flicker on the TV	Have you tried selecting the alternate FILTER mode? Even something as simple as turning the contrast down (and the brightness up slightly) can have a large effect on flicker.

My TV image is distorted (bent).	This often occurs where some areas of the image are very dark and others are very bright - and your TV isn't used to this! The solution is to adjust the contrast and brightness settings on your TV to rectify the problem.
Some colours come out wrongly on the TV.	Turn the 'Level' adjustment at the side of the box clockwise until the correct colours are restored. (See the text 'Hardware adjustments available' in the 'Using the DeltaScan' section, and the 'Identifying the hardware' section.
I cannot adjust the screen size by the amount I need to.	First, remember that size settings cannot be altered in ZOOM or FREEZE mode. The unit is designed to allow size control of the computer display to fit your TV. Whilst in most cases you will be able to make the display smaller on your TV than on your monitor, do not try to make it too large, or the image will be unstable.
I get some 'rough' vertical lines at high resolution.	If you're using the Pro version, switch to the interlaced equivalent of that resolution - this could greatly improve image quality.
I get a flashing, broken display on the TV.	Try repeatedly pressing one of the vertical sizing buttons or one of the vertical positioning buttons, until a stable image appears - if this doesn't work, then you may have gone beyond the limits of the DeltaScan!
My TV image is okay, but a recorded image is very unstable.	Try using the higher-quality 'FILTER' setting. Some video recorders will not record properly with the lower-quality setting, as it forces the DeltaScan to output in non-interlaced video mode.
Can the unit work with CGA and EGA?	The DeltaScan unit can work with CGA and EGA *resolutions* when working on a VGA graphics card, but is not compatible with the output from a CGA or EGA graphics card. Vine Micros no longer supply such units.
What resolutions can the DeltaScan support?	Technically, just about any screen resolution can be fed into the unit. See the technical specifications at the back of this manual for further information. See the section on 'Getting the best possible picture' for tips on what resolutions to use.

How can I reduce smearing?

Smearing usually only occurs when using VHF/UHF or Composite Video connections, and is generally unavoidable - unless you can switch to using S-Video or RGB connections. It occurs because the brightness and colour information is transmitted in one signal, and the two parts have to be 'bandwidth-limited' to avoid them interfering with each other - see Vine's Free DTV Guide.

My 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, whilst professional decks will be even better. Colour smearing is usually the first thing that causes a problem, but this is just because your video isn't capable of recording the picture in its full resolution - *it is not a fault with the DeltaScan or your video.*

I have problems connecting the VHF/UHF output.

Are you sure you've connected the right DeltaScan output to the right TV input (don't try to connect the UHF output to a video) ? Are you using the right cable? Have you tried adjusting the 'UHF Adj.' preset on the left-side of the unit?

Warranty & Returns Procedure

Warranty

Your unit comes with a two year warranty (valid from date of purchase), which covers faults in the DeltaScan unit that arise from defects due to material or construction, when under normal use. The DeltaScan device will be repaired or replaced, as Vine Micros sees fit, free of charge within this period.

This warranty does not cover damage due to negligence, mishandling, accident, improper maintenance, modification, or repair of the unit by anyone other than Vine Micros or their authorised representative.

Note that under all circumstances the warranty only covers losses up to the value of the replacement cost of the unit(s) described in this manual (see 'Disclaimer' on Page 2 of this manual).

Are you sure there's a fault?

Please consult the previous section on problem-solving before sending a unit back. Most 'faults' are due to incorrect usage.

If you need to return a unit...

First contact your supplier, who will obtain an authorisation number from Vine Micros. Please enclose with the unit details of why it has been returned, and failure details if appropriate. Proof of purchase should also be included.

Units should be returned via insured courier or registered post (thus allowing a trace to be made if goods are lost in transit), clearly stating the returns number allocated as this will speed up processing. Goods on their way to Vine Micros are the responsibility of the sender, and Vine Micros cannot be responsible for transit losses.

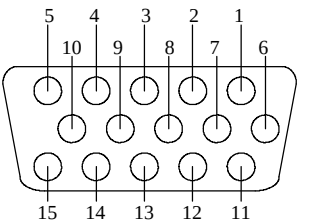
Technical Details

Input Red, Green and Blue @ 0.7v peak white. HSync and VSync @ TTL levels. DeltaScan Pro can accept interlaced inputs. Horizontal frequency range: 30kHz - 50kHz approx. Recommended maximum resolution: DeltaScan 800x600, DeltaScan Pro 1600x1200.

Outputs ***On 625 line PAL units:***
Standard VGA output to go back to monitor.
Composite Video 1v p-p, S-Video 1v p-p, RGB+Sync, YUV (Pro only)*, optional UHF output on channel 36.
On 525 line NTSC units:
Standard VGA output to go back to monitor.
Composite Video 1v p-p, S-Video 1v p-p, RGB+Sync YUV (Pro only)

Power consumption Consumes approx. 300mA @ 12v.
Voltage requirements: minimum 12volts, maximum 16v DC. Requires 'centre-pin positive' 2.1mm DC power plug input. Reverse polarity protected. Internal non-serviceable 1A fuse.

Pin	Function	Volt/Ohm
1	Red signal	0.7v/75 Ohm
2	Green signal	0.7v/75 Ohm
3	Blue signal	0.7v/75 Ohm
4	Y signal	1.0v/75 Ohm
5		
6	Ground	
7	Ground	
8	Ground	
9	RGB Blanking*	2.5v/75 Ohm
10		
11		
12	U signal-Pro only*	0.8v/75 Ohm
13	Composite Sync	TTL thru 1K
14	V signal-Pro only*	1.0v/75 Ohm
15	Composite Video	1.0v/75 Ohm



RGB Output socket

*When using RGB/YUV output, ground pin 9 through a 75 Ohm resistor.