Mac Picasso 540

English

A Philosophy

a Graphics Accelerator

A Legend Continues

Development

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We are always pleased to hear the views of our customers. If you have any comments or suggestions, please contact us at :
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Introduction

We would like to take this opportunity to thank you for buying our MacPicasso graphics accelerator. With this product, you not only have a versatile and powerful graphics upgrade, but also the ability to expand it's capabilities as your requirements dictate.

You will find more precise technical data in chapter 5 of this manual.

A Philosophy
a Graphics Accelerator

A Legend Continues

A legend

In 1992, Picasso graphics accelerators were first produced for Amiga computers. Picasso was the first graphics accelerator for everyone. Easy installation, low price, high stability - all these features were to be found with the Picasso. Suddenly, people had access to new spheres of graphics performance.

In other words: Picasso created a new Amiga.

The Amiga market had long awaited these new possibilities. User manuals were translated into more than 20 languages - sometimes without our knowledge! During the development of Picasso we paid attention to every detail and we tried to avoid any minor mistake. The excitement of users, user-groups and distributors turned the Picasso into a success story!

A Philosophy

Why did you buy a Mac? Probably because a Mac makes it easier for you to express yourself. Especially with graphics. Design and DTP is still best served by the Mac because Apple has made technology work for the user in a simple, reliable and efficient manner.

A legend continues

Like the predecessors for the Amiga, MacPicasso enhances the brilliant features of the Mac! MacPicasso replaces superfluous menus with useful and supportive ones. We have sought to remove any obstruction which could come between your idea and it's realisation.

You do not know much about computers?

Relax! MacPicasso is made with you in mind - Straightforward installation and set up is a priority with this product.

Yours sincerely

Hubert Neumeier

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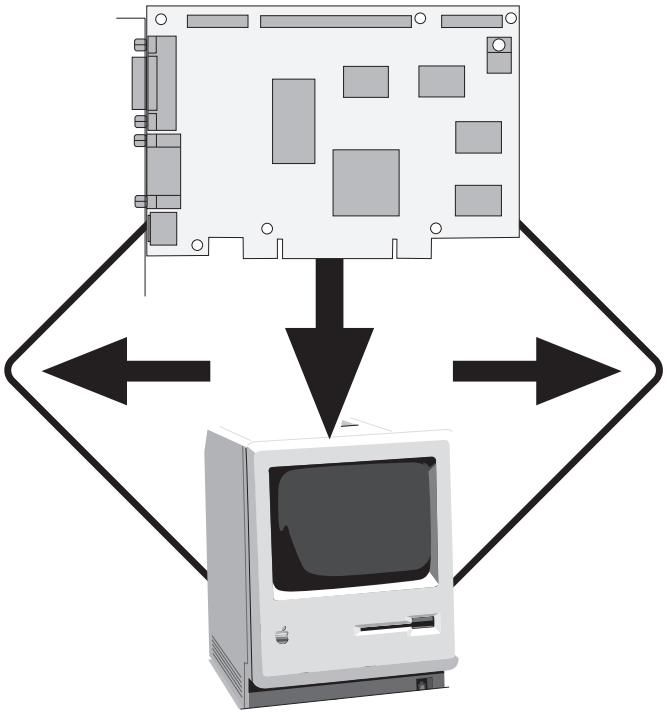


1 Installing the Hardware

Do not be afraid ...

The installation of the graphics accelerator is quite simple and can be accomplished even by an absolute newcomer. Your reseller may have said you could invalidate your warranty if you open the computer, but this is generally incorrect on a system designed for easy expansion. If, however, you feel uncomfortable performing the installation, please consult a qualified person.

... but do not be careless

If you are going to install the graphic accelerator yourself, please follow our instructions carefully. You may damage the computer and/or the graphics accelerator if you install it when the computer is running or switched on. Please read through these pages prior to fitting, and also pay attention to the instructions in your computer's user manual.

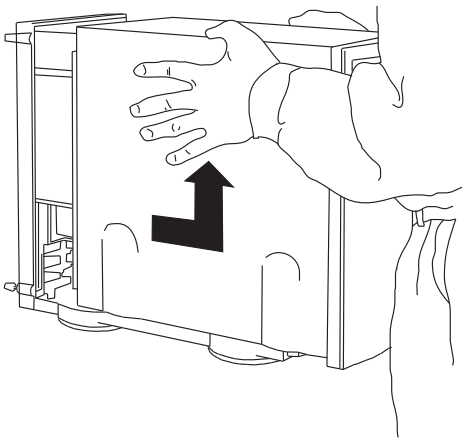
The following instruction describes the installation of MacPicasso540 in a typical PCI-Tower Apple or a typical Desktop Macintosh computer. In the case where your system configuration differs, please consult your system's documentation in a chapter detailing system upgrades.

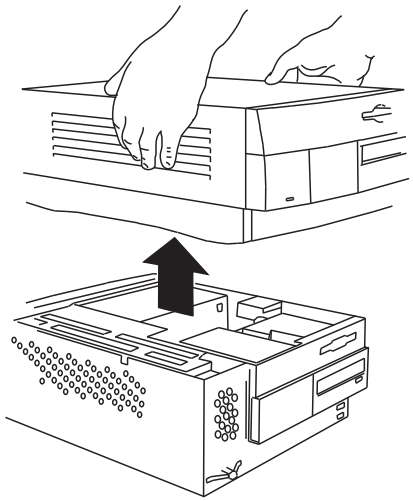
Installing the graphics accelerator

1. Switch off the computer. Please do not remove the power cable. This will assist you in discharging static later on.

2. Remove the monitor signal cable from your computer. You may have to remove some screws.

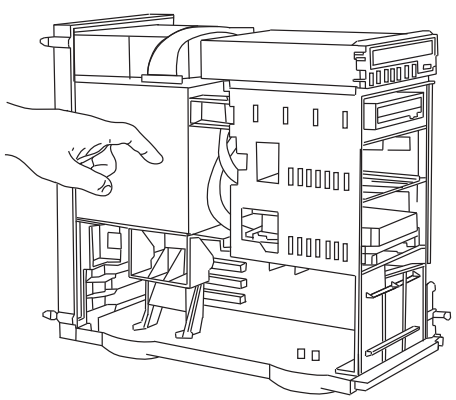
3. Unscrew the fixing screws from the cover and remove it. With the Umax Apus 3000, remove the handle screw and turn the computer cover upside down. Now unscrew the two screws from the bottom and remove it. With Umax Pulsar, you may require the help of another person for assistance in opening the case.

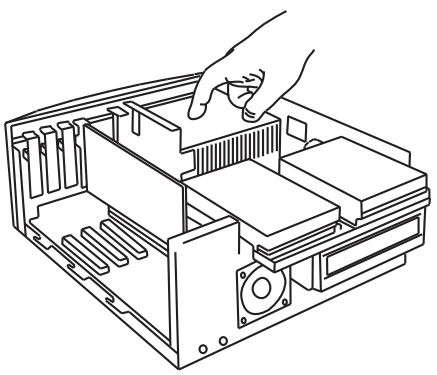




4.Touch the metal surface of the power supply unit. Do not worry if you experience a small static discharge. It will prevent the possibility of electro-static charge damaging your graphics accelerator or your computer.

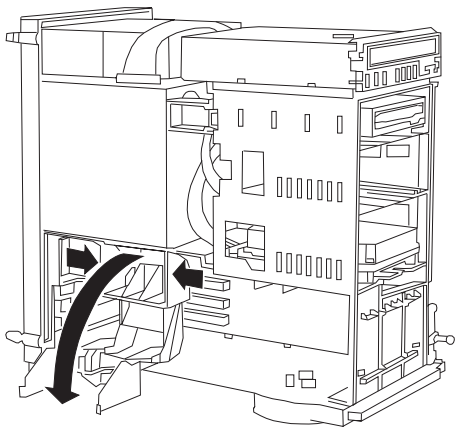
Touch the grounded power supply

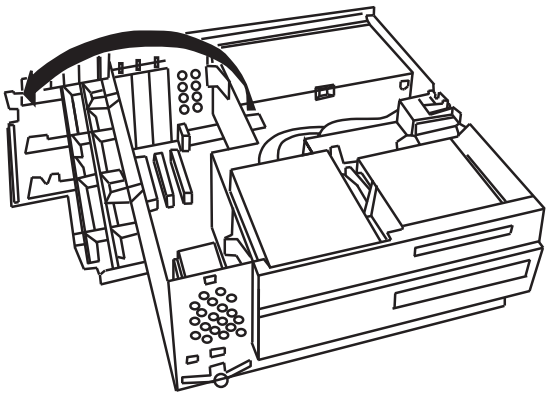




unit in order to prevent electro-static charge from damaging your graphics accelerator.

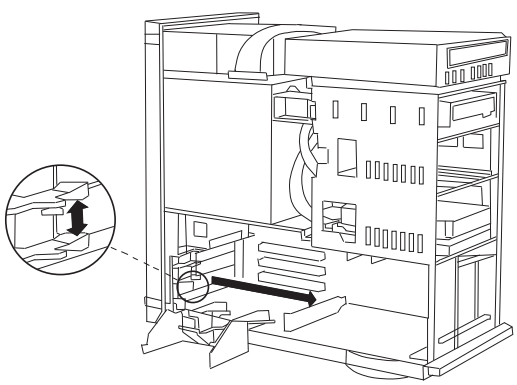
5. Unhinge the plastic cover over the expansion slot area.



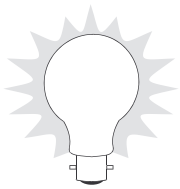


Press the plastic flaps in order to unhinge the plastic covering over the expansion slot area.

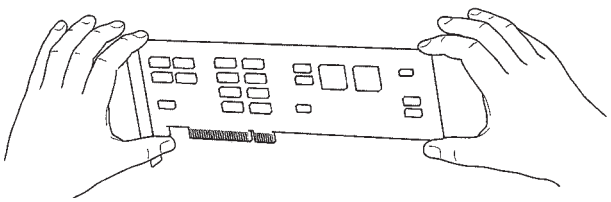
6. Remove the access cover which protects a free expansion slot from the access port. It will be replaced by MacPicasso's rear slot plate together with the monitor connections.



Remove the access port cover from the access port. It will be replaced by the MacPicasso's rear slot plate.

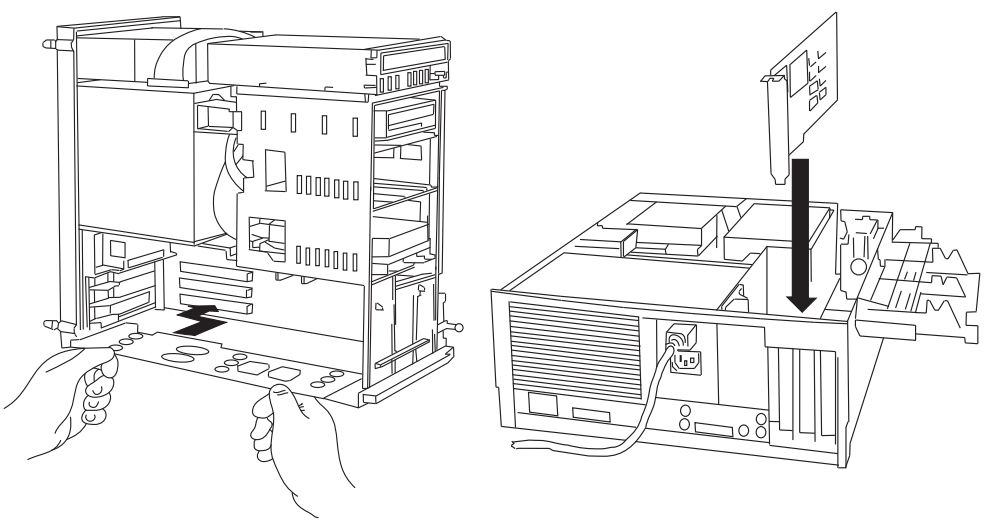


You may store the removed access cover in a safe place in case you later remove the MacPicasso, or fix it securely inside the case bottom with scotch tape. However, it is important ensure it is fixed firmly otherwise it may move around in the computer and cause a short.



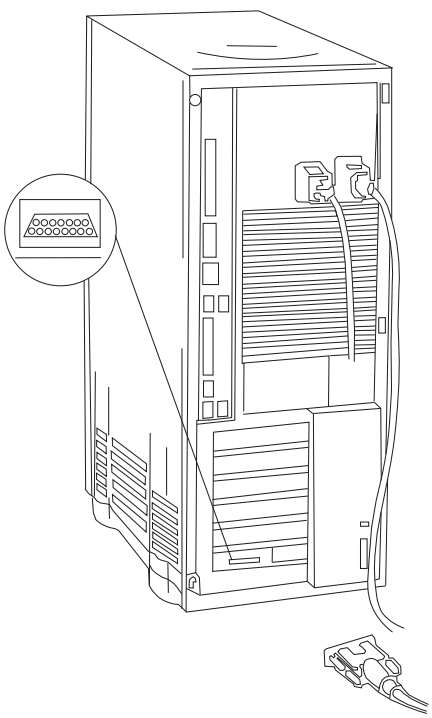
7. Hold the MacPicasso with both hands as shown above. Do not handle the board unnecessarily to avoid further possibility of static damage. Install the board in the free expansion slot. With Umax-Computers, the MacPicasso must be secured with a screw.

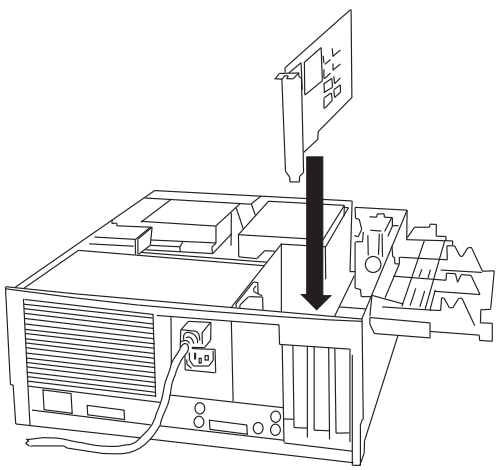
Do not use force! The graphics accelerator should fit snugly into the expansion slot with minimal pressure. The plastic flaps that once held the access port cover should now hold the MacPicasso. The MacPicasso is properly installed if the plastic flaps prevent you from removing it with one hand.



For some tower computers (such as Umax Pulsar 1500, S900), the data transport rate varies on different expansion buses. Your Mac will work faster if you use a faster expansion slot. Normally the higher the slot, the faster the expansion slot. However, it is impossible to put the graphics accelerator in the fastest slot on top of the Umax computer because of mechanical restrictions of the Umax tower case. We therefore advise you to put the MacPicasso in the second slot from the top.

8. Return the plastic covering to it's original position.
9. Close the computer cover.
10. Connect the monitor cable to the MacPicasso



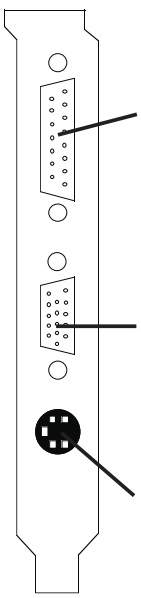


MacPicasso provides you with two monitor interfaces in order to make it easier for you to connect various monitors to it.

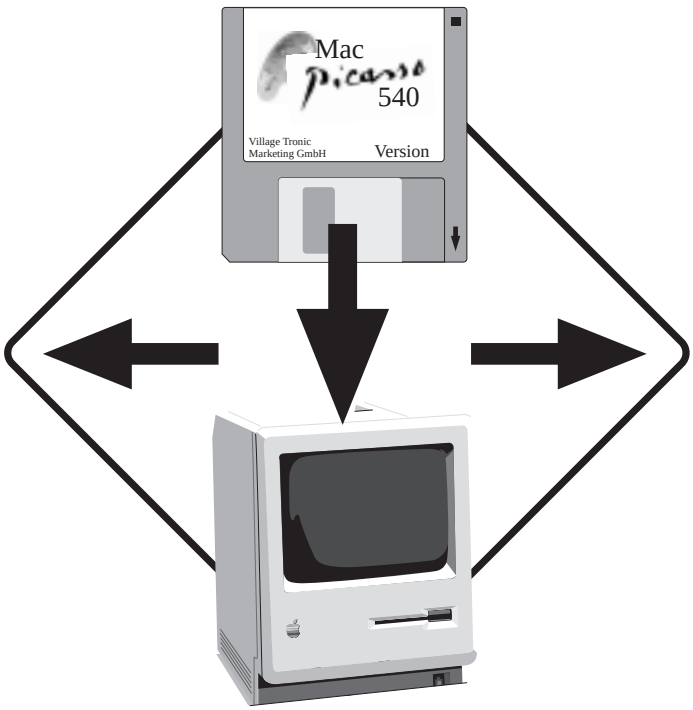
If you are using an adaptor to connect your monitor with the computer, you can normally discard it. This gives you more variety when choosing resolutions. Do not be afraid to experi-

ment! You cannot damage anything by trying things out. There is more information regarding the variety of resolutions later in this manual.

MacPicasso also supports monitor types such as workstation (sync-on-green), PC-VGA, black and white and portrait monitors, although they are not very common today. If you have access to such monitors, you can consider the use of a low cost two-monitor system. Further details concerning the connection of these “ancient” monitors (which nevertheless produce high quality pictures) can be found later in this manual.



Apple-Monitor-connector		Plug your original Mac monitor in here.
supports:	ID-Bits Composite-Sync Sync-on-green	
VGA-Monitor-connector		It is not necessary to use an adaptor for your VGA monitor.
supports:	DDC2b Sync-on-green	
S-VHS-output		To connect your TV-set you will need the Pablo module
supports:	PAL/NTSC	



2. Installing the Software

Software installation:

1.Insert the disk “Install Picasso Monitors” into the disk drive. You will see a disk symbol like this

2.Start the install program bydouble clicking on “Install Picasso Monitors”. You will see the following screen:

3. Click on “Continue”

The dialog box for standard-installation will appear.

4. Click on the button “Install”.(*)

(*) With the standard installation, all software components will be installed. If you click the button “Custom” you can choose the components you want to install. All others will be omitted.

A window will show you the progress of the installation:

5. After the installation you will see the following window:

6. Click “Quit” in order to exit the installation program.

7. Choose “Restart” from the menu “Special” in order to activate the installed software program. The disk will be ejected and you can now remove it.

Software Concepts

There are three main parts to MacPicasso software : the hardware driver, application accelerator and Monitors and Picasso application. You will also find some tools on the disk.

The hardware driver executes from the ROM chip on MacPicasso board. The accelerator and Monitors and Picasso are installed onto your hard disk. The Driver and accelerator run in the background – you we probably never come into direct contact with them. You should always use Monitors and Picasso for changing resolutions, colour depth and so on.

QuickDraw Accelerator

The QuickDraw Accelerator comes as a system extension called MacPicasso_Accel_PCI. The MacPicasso board may be used without MacPicasso_Accel_PCI. Most of graphic operations (e.g. scrolling or moving of windows) will be slower when high resolutions and colour depths are chosen.

When the computer is started, the icon of MacPicasso_Accel_PCI will appear on the screen. If no MacPicasso accelerator is found, the icon will be crossed out. The crossed out icon will occur when the hardware is not installed or no monitor is plugged into MacPicasso's connector. Acceleration works only with 256, thousands or millions of colours. Black and White mode cannot be accelerated.

Please note, that MacPicasso_Accel_PCI only accelerates QuickDraw – you may consider it as a part of QuickDraw. So it is not able to accelerate applications that do not use QuickDraw.

Driver software -- some technical aspects

The driver is the heart of the system – without it the MacPicasso would not work at all. This kind of software, dedicated to the hardware and stored on the board, is called firmware.

Unlike application software, firmware drivers are ready to work as

soon as the computer is switched on, even before the hard drive is accessed. The effect of the hardware driver is instantly apparent because without it simply displaying the start-up screen on the monitor would not be possible.

Once the driver is operational, the MacOS, QuickDraw or any custom application program can take advantage of MacPicasso's special hardware features. Software not in this category would not take advantage of the MacPicasso's features. The Monitors and Picasso functions use the driver excessively.

To be more precise, there is not only one driver built in, but two. One is a full featured driver to support MacOS or compatible systems. The other is an Open Firmware Driver, which is not quite as powerful as the first driver, but completely independent of the CPU and OS.

Open Firmware Drivers principally run on every computer, as long as the Open Firmware concept is implemented. Macintosh computers (prior to June 1997) do not use this driver, but forthcoming CHRP or PPCP machines will do. This means that with Open Firmware Drivers you will be able to run OS’s other than MacOS without changing any part of MacPicasso's ROM.

Therefore, under Open Firmware your MacPicasso should run even in Non-Mac systems quite normally. The only problem is that computers having the Open Firmware concept implemented are not readily available yet. Apart from the future Mac's, we only know of Sun's workstations supporting it.

Sync On Green – the jumper

The MacPicasso 540 is able to mix monitor synchronisation signals with the green colour signal – this feature is called "sync on green" (SOG).

Some monitors need SOG to show anything. Others do not

work properly with it and show the wrong colours or drive brightness too high. A jumper is built in to enable or disable SOG during system boot. (This setup can then be changed by software at any time.)

With the jumper closed, Sync On Green is enabled at boot time. With the jumper open, SOG is disabled. Please put the jumper on its dedicated single pair of pins only. Never put it on any of the connector pins, which consist of a double pin rows. Putting the jumper on connector pins may cause serious damage to your MacPicasso.

After the system has booted, SOG can be enabled or disabled by control software regardless of the original jumper setting. The jumper defines the state of SOG during system boot or restart only. This remains unless redefined by software.

Please note: Changing the jumper "on the fly" (system running normally) has no immediate effect. You must restart your computer first.

Sync On Green -- technical details

The Sync On Green mode is used to reduce the number of signal lines needed between the computer and monitor by mixing horizontal and vertical sync onto one of the colour signals. This technique originates from TV, where it was developed to get all TV's partial signals on one single "line" – the RF transmission channel.

Sync On Green signal is achieved in two steps: 1) Both sync signals are composed together into a single "composite sync" signal (CSync). 2) The CSync signal is composed together with colour signal(s).

The second composition step is historically done with the green signal of the RGB output, so we speak of "Sync On Green" today.

For CSync there is an extra signal on the line. The electrical signal

definition must be extended to get extra "signal space". This is achieved by putting the colour signal on a voltage socket:

While the colour signal range is 0...0.7 V without SOG, it is shifted up to 0.3...1 V with SOG enabled. The range below 0.3V is used to code sync signals.

MacPicasso 540 not only puts the sync signals on the green colour signal, but to the red and blue signals too. We discovered that the usual sync-on-green leads to wrong colours more frequently than our sync-on-all technique.

If you own a SOG monitor, that does not like "sync on all" (incorrect colours due to too little green), please do not hesitate to contact our support. There will be a solution for you.

About MaPi_PowerSave_Enable and MaP_PowerSave_Disable

Many monitors use a power save mode. Unfortunately, some programs use this feature incorrectly. They switch the sync signals off while you are working with your computer. This has two disadvantages:

- A program changes the display mode in an undesired way.

- Your monitor goes into power-saving-mode (dark screen) even though you are using your computer.

The MaPi-tools changes the modes of all MacPicasso boards, if the board supports this feature. MacPicasso graphics accelerators support power saving by allowing the MacOS to switch the sync signals on and off.

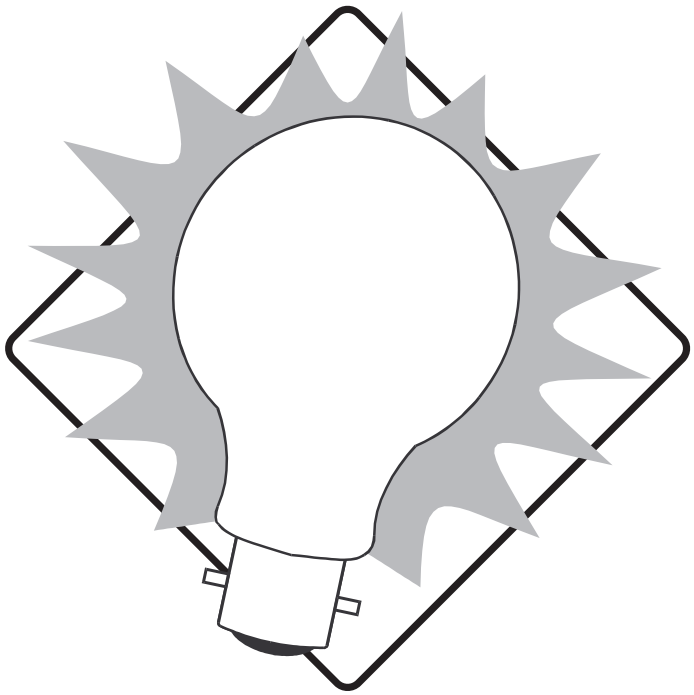
MaPi_PowerSave_Disable disables the power saving support of the MacPicasso board. After starting this program, the sync signals cannot be switched. MaPiPowerSave_Enable enables the power saving feature once more and the sync signals can be switched again.

If you have a program which changes the display mode of your MacPicasso board in a way that you do not like, you may want to use MaPi_Modes_Disable. After starting this tool only the currently used display mode will be available. There is now no way to switch to a different display mode. By running MaPi_Modes_Enable all display modes will be available again.

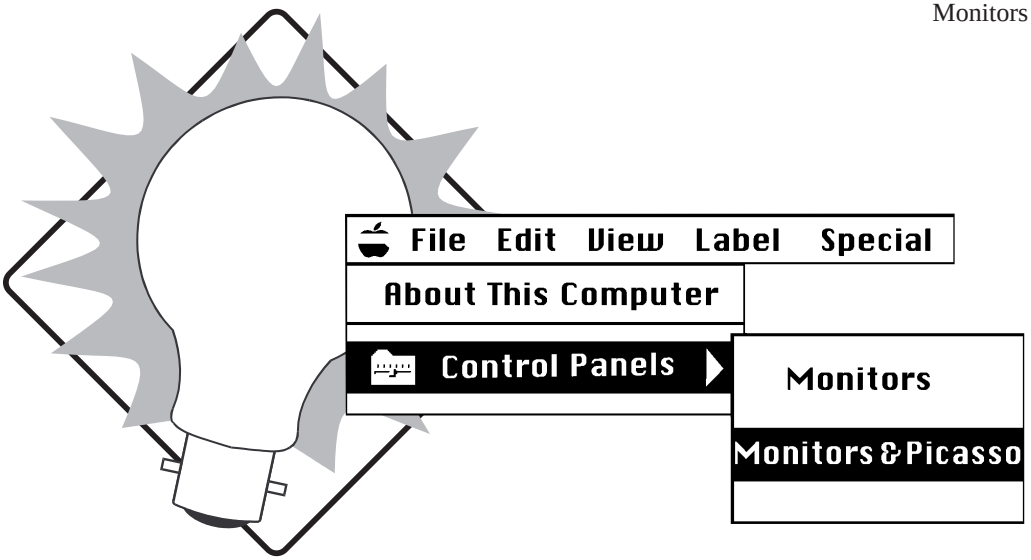
If you change the monitor which is connected to a MacPicasso board, the MacPicasso provides only one display mode. This display mode is the one which can most likely be handled by the widest range of monitors. After restarting your Macintosh you can choose between all available display modes. If you start MaPi_Modes_Enable, all display modes will be available immediately.

You may ask why in some situations the MacPicasso provides just one resolution. This is in order to ensure the highest probability of displaying a visible picture and to protect the monitor.

In some cases it may be that the operating system switches to a resolution your monitor cannot work with. You can prevent this if you use MaPi_Modes_Enable after the first start after changing the hardware (installation of graphics card, changing the monitor) and switch to the desired resolution. If the desired resolution is already active and you do not need to change it, please change the colour depth instead.



3. Productive use:



3.1 Monitors & Picasso

Foreword

When you read in our introduction that MacPicasso 540 is a philosophy, you may have thought that this is just marketing talk. In this chapter we will convince you that this is not so. We believe that saying that the MacPicasso 540 will change the way you work is no exaggeration.

You may already have asked yourself :

• Why do I have a landscape format monitor although I work with portrait documents ?

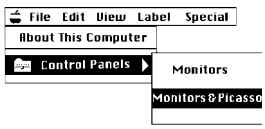
• How can I make use of the several depths of colour which the Mac offers?

• What is better for me, a large monitor or two smaller ones?

The point of MacPicasso 540 is that it does not decide what is good for you. It offers you the ability to find out for yourself. It does not give answers, it offers solutions. You will be able to find out what meets your ideas and demands. Through experimentation you can find out what is effective for you.

Starting Monitors & Picasso

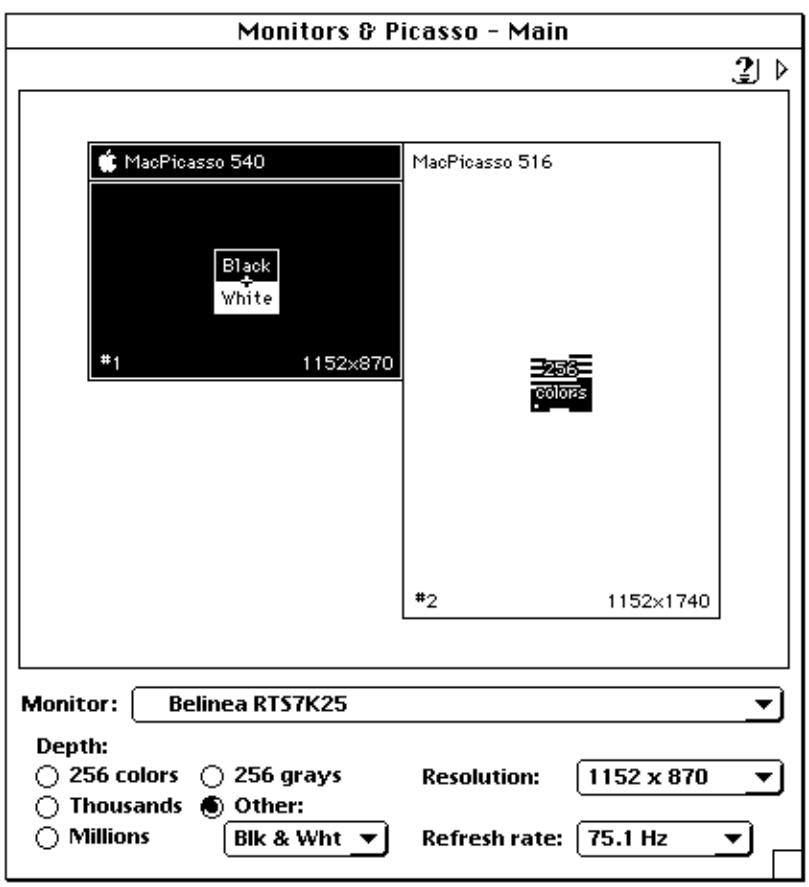
Here you have two possibilities:



1. You can start from the apple menu/control panel/Monitors & Picasso.
If you need to configure your graphics accelerator you will find Monitors & Picasso in the same place you found Monitors & Sound.

2. As an autonomous program
The Installer copies Monitors & Picasso into Control Panels. However, if you like you can start it in a different way. You may start your application with a launcher. Please feel free to copy Monitors & Picasso into this folder.

Monitors & Picasso - A complete overview

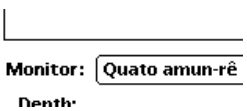


It is especially important when having to change the configuration of your graphics accelerator or your monitor (or with the first installation), to have a complete overview. Monitors & Picasso helps you with this.

Previously installed graphics accelerators

If we already know the producer you will find the name in the blue or grey box that represents the monitor. MacPicasso 540 currently recognises Apple, ATI, Formac, IMS and of course all MacPicasso graphics accelerators.

Monitor recognition



The producer and the type of monitor will be shown if:

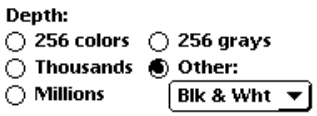
1. Your VGA monitor cooperates with DDC2b (Normally every monitor which is no older than three years).

2. You use a VGA cable with all functions (a cable with BNC connector's does not work here)

3. Your monitor is registered in our data base. If this is not the case you will find information on how to recognise your monitor at our World Wide Web home page.

Monitor recognition is quite useful if you want to use more than one monitor. You have to know which monitor is connected to which graphics accelerator.

Depth

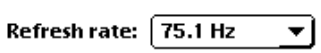


The filled button under Depth shows you the colour depth that is currently activated. If the button and its description are grey this depth cannot be used with the current resolution. If you want to use this particular depth, you will have to change the resolution.

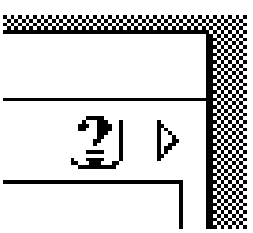
Resolution

Right next to Resolution you will see the resolution which is actually in use. If you want to see all possible resolutions Monitors and Picasso provides you with a list in a pop up menu. Just click the arrow beside the current resolution. The number of possible resolutions depends of your graphics accelerator.

Refresh rate



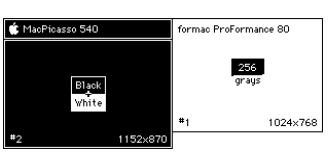
Right next to Refresh rate you will see the refresh rate which is actually in use. If the letters and the background are grey, you cannot choose another refresh rate. Otherwise, you may try another one from the pop up menu.



Help

Help shows information when you click the help symbol. Every window has its own symbol and provides you with information applicable to it.

Multi monitor systems



The main window of Monitors & Picasso shows you the configuration of all monitors connected to your system. Every monitor is identified by a rectangle. Bottom left in the rectangle is the number of the graphics accelerator. Bottom right shows the chosen resolution. In the title line you will find the name of the graphics accelerator. The main monitor can be recognised by a symbolised menu line.

Graphics accelerators and monitors

When configuring a multi monitor system, one has to find out which graphics accelerator is connected to which monitor. This is achieved with the assistance of the window “Another screen”. This will identify the graphics accelerators in the system and allow the relevant screen to be set up.

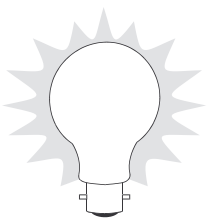
Often you may wish to use different sizes of monitors and different types of graphics accelerators in a multi monitor system. It is therefore advisable to connect the more powerful graphics accelerator with the bigger monitor.

Configuration

Selecting the main monitor

You can choose the monitor you want to work with in the program Monitors & Picasso. When the program is started the important windows will be opened on the main monitor. If you want to make another monitor the main monitor you can use the window “Another screen”. In this window you can use the buttons “Work Here” or “Make Main”. If you do so, the output of Monitors & Picasso will be transferred to the new monitor. If you click “Make Main”, this monitor will be made the main monitor.

In the Window “Monitors & Picasso Main” you will see a menu line with an Apple symbol in it. This marks the rectangle of the main monitor. This line can be moved with the mouse to an other rectangle, making this the main monitor.



You can use a large monitor as the main monitor for work programs, and the floating palettes can be moved to the smaller screen so that they do not clutter your documents.

Selecting the monitor to work with

In the window “Monitors & Picasso Main” the monitor whose configuration can be changed is identified by having a dark rectangle. To configure another monitor, simply click the appropriate rectangle of that monitor.

Adjusting the monitors

If you install a second graphics accelerator you can use two monitors. Mac™ OS will link them together and handle them like one working display. You therefore have to tell the system how the monitors are to be arranged. This can be achieved by dragging and moving the monitor symbols in the window “Monitors & Picasso Main” with your mouse until they have the same position as the real monitors on your desk.

Depth

By changing the depth you can accelerate your Mac. If you work with 256 colours only a quarter of the data has to be processed compared with million colours mode. This is shown by the speed the picture is updated on screen. On the other hand, not every application can work with fewer colours. If you work with photos, you should use million colour mode. The table above gives you some advised settings.

Application	**Program**	**Depth**
Compatibility tests, techn. Applications		b/w
Text	Word, Pagemaker	256
DTP	QuarkXPress, Freehand	thousands, millions
Image processing	Photoshop	millions

The less colours, the faster the screen update. However, in many cases one needs more colours.

Selecting depth

In the lower left position in the “Monitors & Picasso Main” window are several buttons with which one can choose the colour depth. The less common depths are in a pop up menu under “others”.

Resolution

Apple recommends selecting the resolution on all monitors to 72 DPI. This mode is firmly installed in Apple’s user interface and part of an agreement. It is also the precondition for DTP programs like Quark which use the agreement in order to create a 1:1 measured view on screen. It is also a necessity for multi monitor systems in order to have the same size of windows if one moves them from one screen to another. The agreement is also important in order to always have a readable letter size with all possible monitors and resolutions. In order to get 72 DPI you should use the following resolutions for the following monitor sizes.

Size	Resolution
12"	512 x 384
13, 14"	640 x 480
15"	800 x 600
16"	832 x 624
17"	1024 x 768
21"	1152 x 870

Refresh rate

The higher the refresh rate the less the picture will flicker. However, a high refresh rate means a less sharp picture. You therefore have to experiment to find the solution that best suits you. Generally refresh rates of 75 Hz are recommended.

In order to change the refresh rate, choose the pop up menu “Refresh Rate” . You will find a list of several possibilities. The impact of the selected refresh rate will be shown in a box. Confirm with “OK” if you are happy with the result or wait a few seconds until the card switches back to the previous refresh rate . You may also press Esc in order to go back to the old refresh rate.

For further information, please see the chapter “Resolutions”.

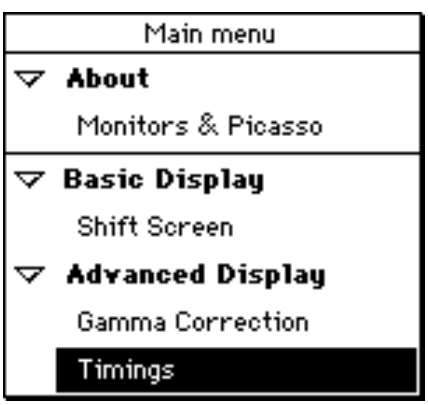
Advice: If you place two monitors together, their electric and magnetic fields may cause some impact on the display. You may see some lines wandering up and down the screen. Changing the refresh rate can decrease this effect.

Changing resolution and refresh rate simultaneously

If one of your monitors has just a few supported frequencies, it may be useful to change resolution and refresh rate together. In this case, press “Alt” and hold it. Now open the pop up menu “Resolution”. The pop up menu now shows suitable refresh rates for every resolution.

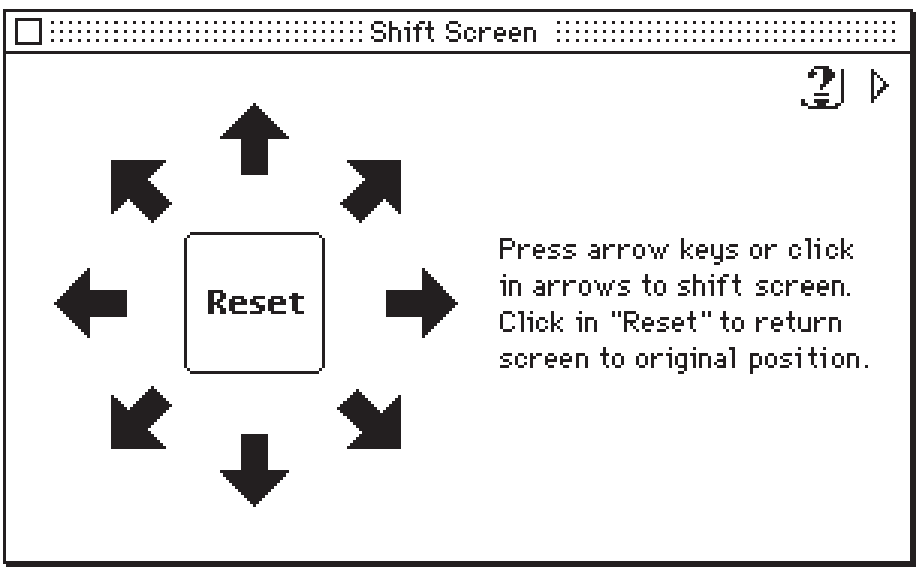
Extended settings

Next to the window “Monitors & Picasso Main” you will find a little window called “Main Menu”. It has three main parts and gives you access to MacPicasso’s extended functions



In the section “About” is the programs information box.

Shift screen

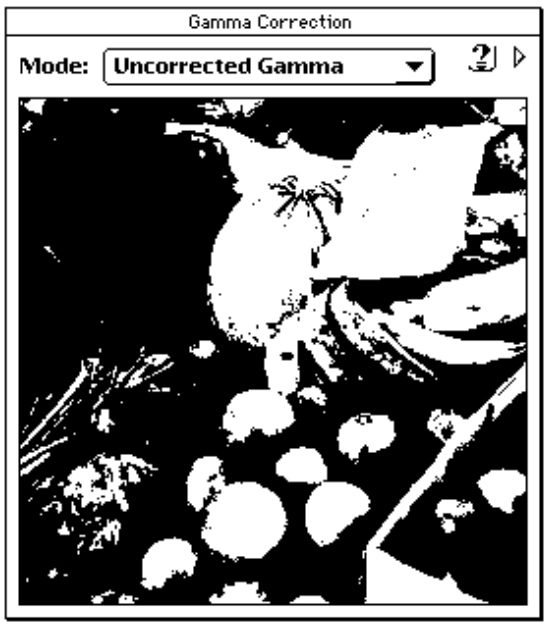


In the section “Display” you will find “Shift Screen”. With this function you can move the picture on the monitor by clicking the direction arrows. The screen will move in the direction of the arrow you click. If you click reset the picture will move back to its original position.

These parameters will be saved when you quit Monitors & Picasso. When the computer is re-started, it will be configured in the way you had previously selected. All data relevant to these settings is saved in the file “Monitors & Picasso Prefs” in the “Village Tronic” folder of the system folder named “preferences”. If you have any problems, simply remove this file and from this moment on you will have only the original graphic modes.

Gamma Correction

With MacPicasso 540 you have the possibility to choose gamma correction. This helps to equalise the distortion of colours caused by the monitor. If you click “Advanced Display” in the Main Menu, you will find the line gamma correction. If you now click this you will see a window with a colour picture and a pop up menu with the different modes of gamma correction.



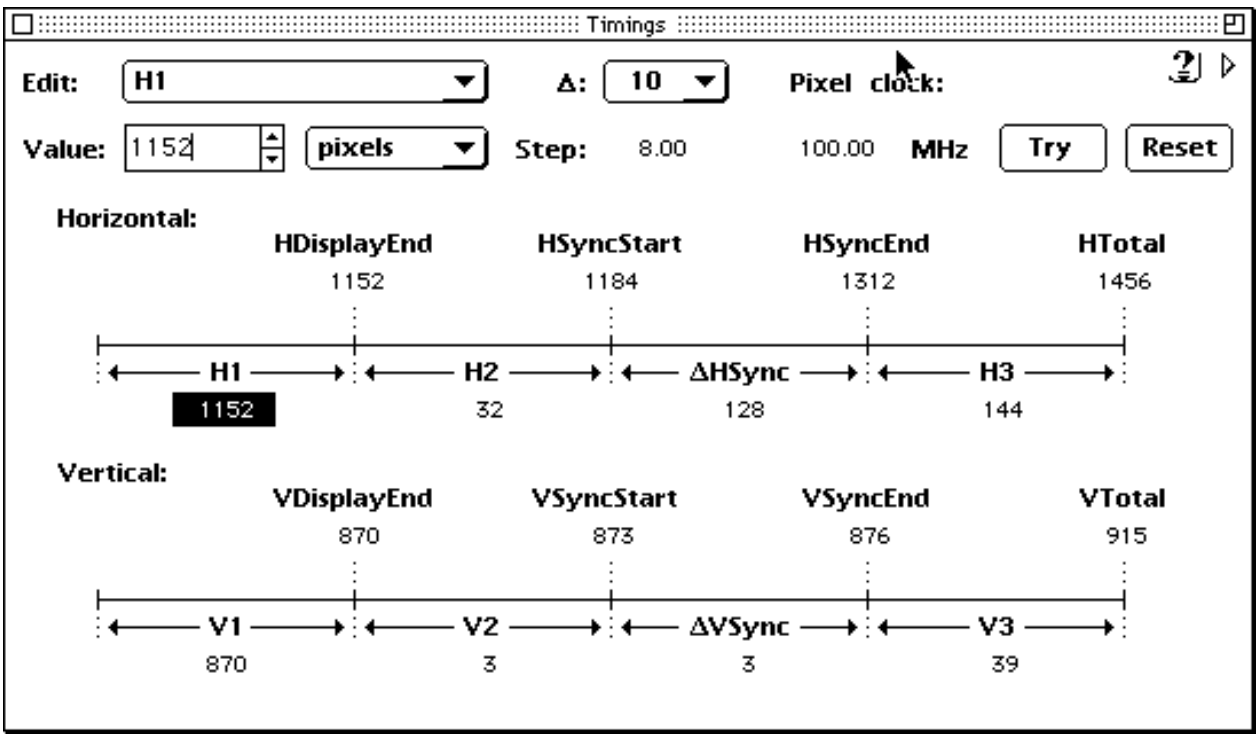
Timing's

Here you are provided with the means to adjust the MacPicasso's graphic resolution for your monitor. In order to do so, you can modify the raw of timing constants such as:

HDisplayEnd	End of a visible picture line
HSyncStart	Start of the synchronisation signal of a line
HSyncEnd	End of the synchronisation signal of a line
Htotal	Total length of a line
H1	Breadth of the picture
H2	Distance between the visible picture line and the synchronisation signal
ΔHsync	Length of the synchronisation signal
H3	Distance between synchronisation signal and the end of the line
VDisplayEnd	End of the picture signal
VSyncStart	Start of the synchronisation signal
VSyncEnd	End of the synchronisation signal
Vtotal	Total height of the picture
V1	Height of the picture
V2	Distance between picture and synchronisation signal
ΔVsync	Length of the synchronisation signal
V3	Distance between synchronisation signal and the end of the line

This setting is especially for older monitors which do not have Apple specifications. Mostly monitors from old workstations

have this problem. Such monitors can be used as a second monitor in multi monitor systems with a MacPicasso 540. For a single monitor system this is not possible because you need a monitor which shows a visible picture from the beginning. In order to use such a monitor, please look in your monitors documentation for the data and input the data into the “Timing” window.



The Timing window

These constants can be shown in pixels, nanoseconds and microseconds. You can choose these with the second button on the line “Value” from a pop up menu. After modification you can test the new configuration by clicking the button “Try”. You will then see a window which asks you to press “k” in order to make the new configuration permanent or to press any other key in order to cancel. If you click the “Reset” button afterwards you will reactivate the original configuration.

These parameters will be saved when you quit Monitors & Picasso. When the computer is re-started it will be configured to use your new settings. All data concerning these settings is included in the file “Monitors & Picasso Prefs” which is found in the “Village Tronic” folder of the system folder named “preferences”. If you have any problems, simply remove this file and you will then go back to the original graphic mode.

3.2 Resolutions

Resolution

Standards

Apple Monitors				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
512 x 384	15,667 MHz	60,15 Hz	24,48 KHz	12"
640 x 480	30, 24 MHz	66,7 Hz	35,0 KHz	13"/14“
640 x 870	57,28 MHz	75 Hz	68,9 KHz	15" Portrait
	57,28 MHz	75 Hz	68,9 KHz	
832 x 624	57,28 MHz	75 Hz	49,7 KHz	16" RGB
1024 x 768	80,0 MHz	75 Hz	60,24 KHz	19" RGB
1152 x 870	100,0 MHz	75 Hz	68,7 KHz	21"

Standard-VGA Monitors				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
640 x 480	b/w, 8, 16, 32	60 Hz	31,5 KHz	VGA
	b/w, 8, 16, 32	72 Hz	37,8 KHz	
	b/w, 8, 16, 32	75 Hz	37,8 KHz	
	b/w, 8, 16, 32	86 Hz	45 KHz	
	b/w, 8, 16, 32	100 Hz	50 KHz	
	b/w, 8, 16, 32	160 Hz	84 KHz	
800 x 600	b/w, 8, 16, 32	60 Hz	37,9 KHz	
	b/w, 8, 16, 32	72 Hz	48 KHz	
	b/w, 8, 16, 32	85 Hz	54 KHz	
	b/w, 8, 16, 32	100 Hz	62,5 KHz	
1024x768	b/w, 8, 16	43 Hz int	38 KHz	
	b/w, 8, 16	60 Hz	48 KHz	
	b/w, 8, 16	75 Hz	60,2 KHz	
	8	100 Hz	80 KHz	

If you do not have room for a 21” monitor, you may consider using two smaller ones. This is a cheaper solution than a large monitor and you will have more screen space.

Locked Start Up Resolution

Start up-VGA				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
640 x 480	b/w, 8, 16, 32	60 Hz	31,5 KHz	VGA

MacPicasso supports any VGA monitor. When you switch on the Mac after installing the MacPicasso, it only offers a resolution of 640 x 480 at 60 Hz. This resolution is supported by every VGA-monitor. This procedure is necessary because VGA monitors do not have monitor sensing like Apple monitors. This ensures that a compatible display will be used by default, whereas an autosensing monitor will choose the correct resolution automatically. You will have all resolutions available after rebooting the system.

More displays

Portrait monitors				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
640 x 870	b/w, 8, 16, 32	74 Hz	68,8 KHz	Apple Full Page

These monitors are designed for all those who work with word processing or DTP software, where almost all documents are on end (=portrait). With these monitors you can see the whole document without scrolling . For these purposes a 15” monitor offers the same performance as an expensive 21” standard monitor (=horizontal format). A portrait monitor adopts the format of your document.

How well you can read the text on your monitor depends on the resolution. Let’s say you have a document with 80 written lines. With a 16“ resolution (832 x 624), you have 624 screen lines for 80 letters. This allows 7.8 screen lines per letter. If you have 870 screen lines it makes 10.8 screen lines per letter. It is therefore easier to read.

The same document displayed on a 21” monitor would show this whole page without scrolling. The resolution of a 21“ monitor is 1152 x 870, hence 870 screen lines. With a portrait monitor, you have also 870 screen lines but just 640 in width. However, since a document is mostly on end, it really does not matter.

The advantage: you have a better display since your monitor is smaller and you save money and space on your desk.

Speed Screen				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
640 x 960 #	b/w, 8, 16, 32	67 Hz	37,5 KHz	Apple 13"
832 x 1248 #	b/w, 8, 16, 32	75 Hz	49,7 KHz	Apple 16"
1024 x 1536 #	b/w, 8, 16	75 Hz	60,2 KHz	Apple 19"
1152 x 1740 #	b/w, 8, 16	75 Hz	68,7 KHz	Apple 21"
2432 x 1712	b/w, 8	75 Hz	68,7 KHz	Apple 21"

1. This is good for web-browsing and long pages because of the very speedy hardware scrolling.

2. With Quark you can see the whole page. Since speed screen is a portrait format, it is also ideal for word processing. Without speed screen you would just see half of the page on your monitor. With speed screen it is enlarged by a factor of four and you do not have to zoom. Therefore, with speed screen you will have portrait monitor quality on standard monitors.

Presentation

Pablo				
resolution	colours[1]	vertical refresh	horizontal refresh	
640 x 480 640 x 480	50 Hz 50 Hzi	31,5 KHz 15,75 KHz	Monitor TV	 PAL Underscan
768 x 576 768 x 576	50 Hz 50 Hzi	31,5 KHz 15,75 KHz	Monitor TV	 PAL Overscan
640 x 480 640 x 480	60 Hz 60 Hzi	31,5 KHz 15,75 KHz	Monitor TV	 NTSC

Pablo activates the video output of the MacPicasso 540. Hence it supports your TV and monitor at the same time.

1. During presentations you can view a display on a small monitor whilst it is shown on a large video projector behind you at the same time. You do not have to turn away from the audience.
2. With smaller presentations you can also use a large TV screen instead of a large monitor or a video projector.
3. Combined with the 3-D Overdrive and a TV screen, Pablo forms an ideal gaming set-up.
4. If you want to work with video, Pablo and Paloma provide you with the perfect combination.
5. You can easily transfer computer animations onto video tape.

TV direct				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
320 x 256	b/w, 8, 16, 32	50 Hz	15,6 KHz	
640 x 512	b/w, 8, 16, 32	25 Hz int.	15,6 KHz	PAL-Video normal
640 x 512 #	b/w, 8, 16, 32	50 Hz	15,6 KHz	
768 x 576	b/w, 8, 16, 32	25 Hz int.	15,6 KHz	PAL-Video overscan
1280 x 512	b/w, 8, 16, 32	25 Hz int.	15,6 KHz	
640 x 430	b/w, 8, 16, 32	60 Hz int.	15,5 KHz	NTSC-Video

These resolutions are available if you connect the Saskia SCART cable (see further equipment) with the MacPicasso. With SCART, a TV monitor can be connected directly to the computer.

State of the Art

100 Hz				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
640x480	s/w, 8, 16, 32	100	50	12“
800x600	s/w, 8, 16, 32	100	62,5	15“
1024x768	s/w, 8, 16, 32	100	80	19“

If you are a sensitive person you may suffer from headaches whilst working for long periods in front of a monitor. Our 100 Hz solution could help you with this. However, you should be aware that only high performance monitors can work properly with this speedy refresh rate.

High End				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
1280 x 1024	S/W, 8, 16	61 Hz	64 KHz	
	S/W, 8, 16	74 Hz	79 KHz	
1600 x 1200	8, 16	75 Hz	93 KHz	
1600 x 1200	8, 16	60 Hz	80 KHz	

With high resolution monitors you can normally display more information on your screen. Therefore you may not need a large and expensive monitor. This sounds good, but keep the following in mind: High end monitors change the enlargement scale (which is normally 72 DPI) hence the document becomes smaller. With Mac monitors it is always the same size. Some things, like the menu line, will become particularly small. The punch mask will also become smaller, so the picture is not just smaller, but also more

Using old Monitors

Workstation
Use “Timing's” feature in our software “Monitors & Picasso”

Modern Graphic accelerators are not compatible with the older workstation monitor you probably paid a fortune for. The sync pulses and special frequencies are not supported. Thanks to Village Tronic’s “Any-Sync” technology, you can once again make good use of these monitors.

“Dinosaurs”				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
512 x 384	b/w, 8, 16, 32	60 Hz	24,5 KHz	Apple 12"

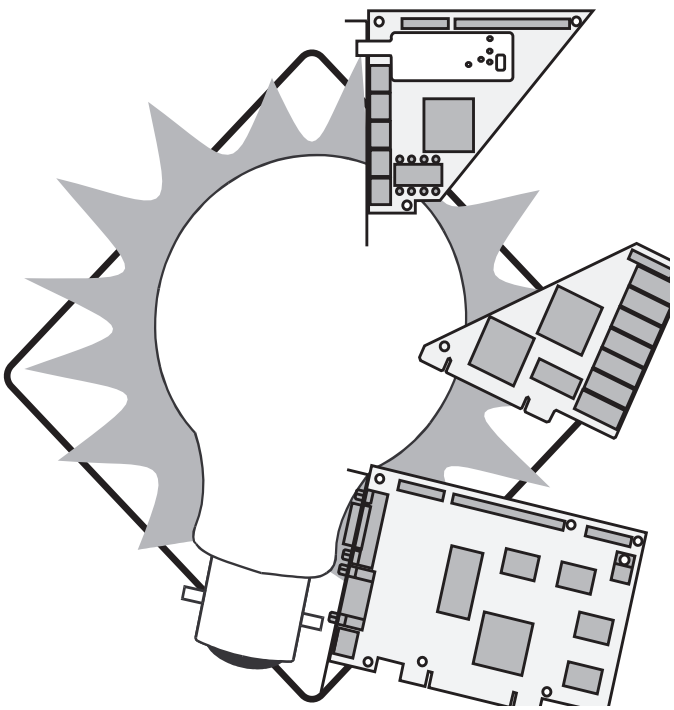
Still in love with your good old Apple b/w monitor? You may double your work space by connecting it to your MacPicasso 540, along with your new monitor!

Interlace				
resolution	colours[1]	vertical refresh	horizontal refresh	typical monitor
1024 x 768	b/w, 8, 16, 32	43 Hz int.	38 KHz	
1280 x 1024	b/w, 8, 16	44 Hz int.	64 KHz	

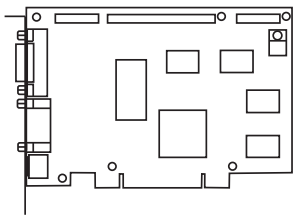
To use interlace, you have two possibilities

1. Old VGA monitors work with interlace only in high resolutions. Nevertheless, the screen does not flicker since the phosphor can cope with such refresh rates.

2. When working with huge objects, one can work with interlace. Even with some flicker, one can use this mode in order to get a quick overview.



3.3 Modules



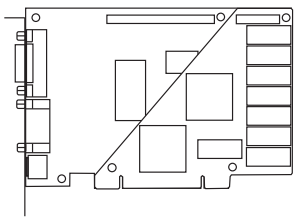
Overview

MacPicasso is not simply a graphics accelerator, but also the nucleus of a unique hardware concept which combines the highest 2-D acceleration with a new level of 3-D and video performance.

This modular concept is unique and unrivalled. There are many more features than the standard 2-D graphics acceleration available when you expand your MacPicasso with one of our modules. You are of course totally free to choose the features you want, and when you want them. No other system offers this flexibility and freedom.

In effect, our modular concept gives you three main advantages

1. You can develop your graphics system as you require it. You do not have to buy features you have no use for at that time.
2. If you later realise that you need additional features, you can purchase the appropriate module at that time.
3. A new and improved module with a higher performance can easily replace it’s predecessor. You do not have to buy a new graphics accelerator to accommodate technological advances.
4. Specialised Modules offer higher quality and performance than “All in one” solutions.



MacPicasso 540 with 3-D Overdrive

3D-Overdrive turns your 2D graphics accelerator into a 3D workstation. Unlike an ordinary 2D graphics card, in this configuration we have three processors working in parallel. In addition to MacPicasso 540's 2D acceleration and 3D hardware zoom, 3D-Overdrive provides two further 64 bit processors. This multi-processing ensures top performance and creates virtual reality.

without 3D Overdrive

with 3D Overdrive

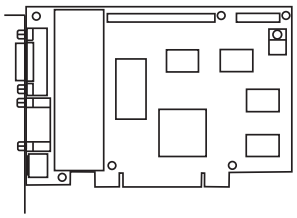
We offer you two possibilities:

Game mode: With 30 pictures per second, the monitor display can look like a movie

DTP-mode: In 1152 x 870 you can create your own 3D designs. 3D-Overdrive provides photo-realistic pictures.

3D-Hardware zoom

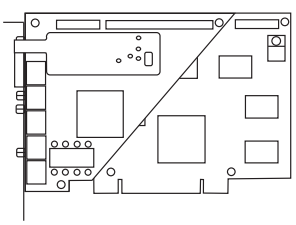
Almost all multimedia applications are configured for 640 x 480. But almost every user has a desktop with higher resolutions. Normally, you can only open your windows within a resolution of 640 x 480. In order to get a full screen picture you have to change the desktop resolution to 640 x 480. In doing so, the user will face some disadvantages. You will lose the order of the icons on the desktop, minimise the working area and reduce picture clarity. Not so with MacPicasso 540! With 3D-Overdrive, one can open the window without these restrictions, with an improved display quality.

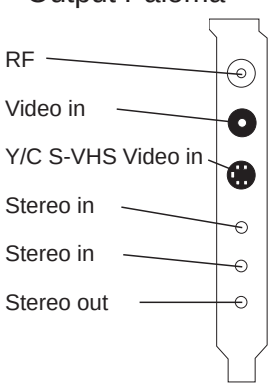


MacPicasso 540 and Pablo

This small module does not require extra space or another slot in your computer, and uses the existing video output connector of MacPicasso 540 for the S-video output. A special feature of Pablo II is that it supports the TV and computer monitor display in parallel. With this module you have new possibilities:

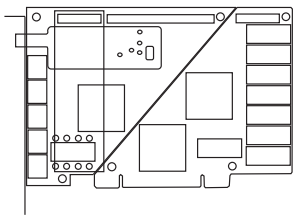
1. During presentations you can view a video display on a small monitor whilst it is shown on a large video projector at the same time to your audience. This allows you to face your audience during the entire presentation.
2. With smaller presentations you can also use a large TV screen instead of a large monitor or a video projector.
3. Combined with the 3-D Overdrive and a TV screen, Pablo forms an ideal gaming set-up.
4. If you want to work with video Pablo and Paloma provide the perfect combination.
5. You can easily transfer computer animations onto video tape.





MacPicasso 540 with Paloma

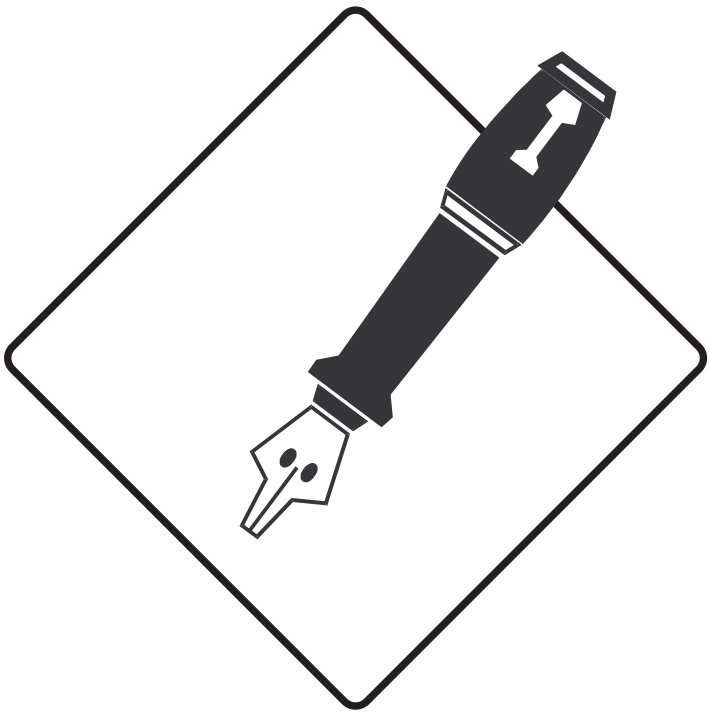
The Paloma module enables you to digitise analogue video signals. This gives you the opportunity to place it onto a computer monitor and work with it. Paloma is the TV input for MacPicasso 540. The Paloma module does not only have connecting facilities for external video sources, it also includes a video tuner on board. Paloma also includes a sound mixer with extra access for Mac-sound and the internal CD-ROM. Synchronised display frequencies are 50, 100, 150 Hz for PAL, 60, 120 Hz for NTSC. With Paloma MacPicasso always works in 24 Bit mode (millions of colours) regardless of the colour depth you are using on your desktop.



MacPicasso + Pablo + 3D-Overdrive

One of the main advantages of the modular system of the MacPicasso 540 is that the modules support each other. For example, you can display the 3D sequences you created with 3D-Overdrive on a TV screen. Or you can take some sequences from a movie, work with them using 3D-Overdrive and bring them back onto video. With Pablo and Paloma you can also change NTSC into PAL. Using Screen shift from “Monitors&Picasso” you can even adjust a poor video.

Together with all the modules, MacPicasso 540 becomes the ultimate High End DTP, multimedia/video/3D solution. Nevertheless, you remain free to choose the components you want. If you would like to have a better 3D performance you can buy a dedicated module and not a whole new graphic accelerator. It is this flexibility, along with price and performance, that makes the MacPicasso philosophy unique and unrivalled.



4. Glossary

DDC Data Display Channel

DDC transfers data from the monitor to the computer. e.g. model, manufacturer, supported resolutions etc. DDC only works if the monitor is connected to the VGA input and if it supports DDC. The connecting cable must also be fully equipped.

Depth

Depth is the number of colours displayed at a given resolution. The supported number depends on the graphics accelerator you use.

The following colour depths are possible:

Million colours. 16 million colours (=16.777.216) can be displayed at the same time. This mode is also called 24-Bit or 32-Bit mode.

Thousands of colours. 32 thousand colours (=32.768) can be displayed at the same time. This mode is also called the 16-Bit mode or High-Colour

256 colours. A selection of 256 colours from a palette of a 16 million (s.a.) colours is used. This mode is also called the 8-Bit mode.

256 shades of grey. 256 shades of grey is used.

16 colours. A selection of 16 colours from a palette of 16 million (s.a.) colours is used. This mode is also called the 4-Bit mode.

16 shades of grey. A selection of 16 shades of grey from a palette of 256 (s.a.) greys is used.

4 colours. A selection of 4 colours out of a palette of 16 million (s.a.) colours is used. This mode is also called the 2-Bit mode.

4 shades of grey. A selection of 4 shades of grey from a palette of 256 (s.a.) is used.

B/W. Just the colours black and white are used. This mode is also called the 1-Bit mode.

Gamma correction

Gamma correction is necessary in order to match the original colours to those seen on the screen. Today's monitors are not able to represent colours linear to the signal voltage. Therefore a print-out would show different colours than the monitor displayed. If, for example, a colour is to be represented on the screen with an intensity of 50 percent, the screen would show it with a different intensity. The gamma correction has to equalise this difference.

Popup menu

You will find popup menus under symbols with a downward pointing arrow.

Menu line

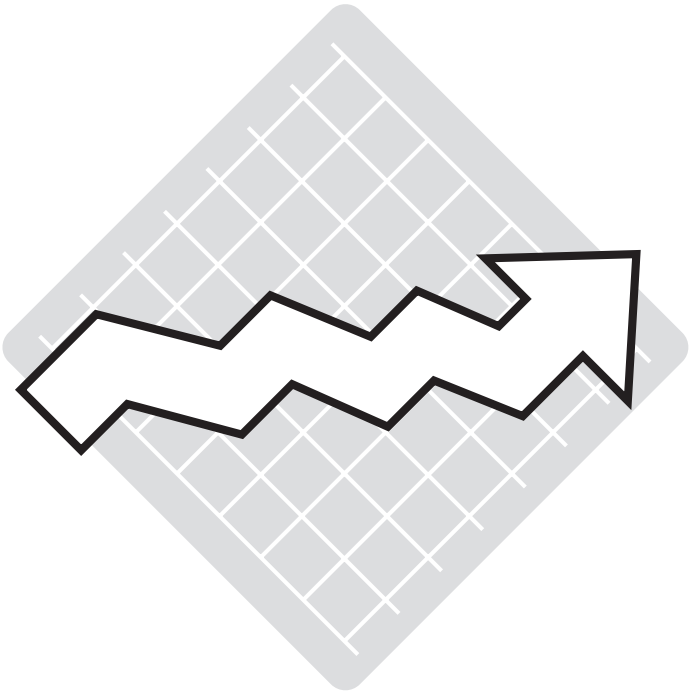
This is the line just under the top edge of the screen.

Refresh rate

Refresh rate means the number of pictures shown per second. (one picture per second = 1 Hz) For ergonomic reasons the refresh rate should not be less than 75 Hz.

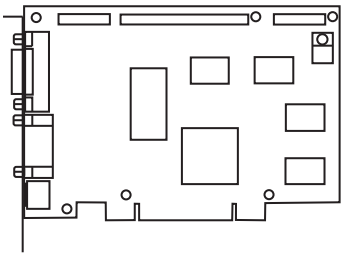
Resolution

Resolution means the number of the pixels on the screen. For example horizontal 832 pixels, vertical 624 pixels.



5. Technical data

MacPicasso - The basic card



Graphic chip:

• Harlequin chip with 100 MHz and SG-RAM technology

• 3D hardware-zoom

• Hardware video-scaler with bi-linear filter and YUV RGB converter

• 3D-bus with 40 MB/s data transfer from 3D-Overdrive

Memory:

• 4 MB graphic memory

• Maximum memory 4 MB for 2D, 12 MB for 3D

• Overall memory band width: 2 GigaByte/s

RAMDAC:

• Gamma correction

• 200 MHz pixel clock

Resolutions:

• 320 x 200 to 1600 x 1200 visible, virtual up to 2432 x 1712

• Maximum resolution, thousands of colours: 1600 x 1200, 75 Hz

• Maximum resolution, millions of colours. 1152 x 870, 75 Hz

• Timing's and resolutions can be configured for special monitors

For further information please see chapter “Resolutions”.

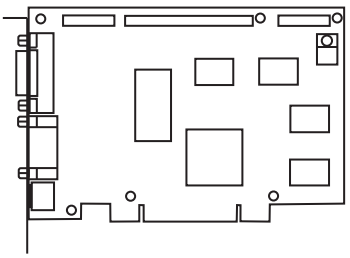
Monitor support:

• Monitor synchronisation available for divided signals (Standard), Composite Sync (CSync) or Sync-On-Green (no special Sync signal)

• Two monitor connections for Apple and VGA monitors

• Automatic monitor recognition for Apple monitors (Apple auto

sensing)



- Automatic recognition of Plug-N-Play monitors (DDC2B)
- Support of “extravagant” monitors like RGB-TV monitors, 12” or B/W screens.

Connectors:

External:

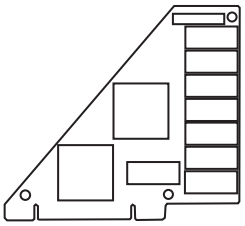
- 15 pin HD-SUB-D, female, VGA monitor connector
- 15 pin SUB-D, female. Apple monitor connector
- S-VHS, activated through Pablo

Internal, for modules:

- 20 pin header for 3D-Overdrive, 40 MByte/s
- 24 pin header for Pablo
- 50 pin header for Paloma

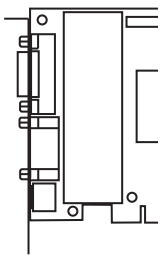
Special features:

- Speed Screen = DTP Autoscrolling
- Picasso Monitors: Control panel for complete overview and easy control



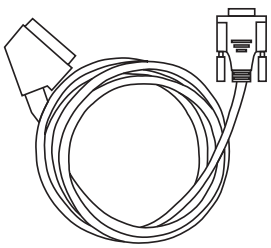
3-D Overdrive

- Top 3-D performance using highly specialised hardware.
- Multi-processor concept with 3 memory buses for parallel pixel and texture calculation.
- Up to 16 Mbytes memory
- All calculations for pictures in True Colour (24-Bit)
- 13 different texture frameworks (including compressed 8- and 16-Bit frameworks)
- All texture frameworks can be used in parallel.
- Correct perspective texture mapping
- Bi- and Tri-linear filter
- Level of detail (LOD) MIP-mapping
- Gouraud shading and texture modulation on polygon level
- Texture morphing and texture animation
- Sub-pixel and sub-texel correction
- Pixel oriented special effects (fog, transparency, translucence)
- Alpha blending
- Software interface for RAVE, GLIDE and QuickDraw 3-D
- Memory band with up to 2 gigabyte/s
- Over 45 Mpixel/s polygon filling rate (bi- and tri-linear filtered)
- Over 1 million triangles/s (with filter, MIPO-mapping, Z-buffer, alpha blending and special effects. One triangle contains 25 pixels)
- 3D Hardware zoom



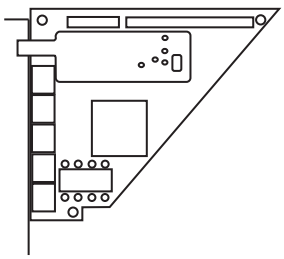
Pablo - The video out module

- For all NTSC- and PAL video norms (NTSC, NTSC-EIA, PAL B, G, I and PAL M)
- Video output available: SVHS or FBAS
- Video signal and computer picture are created in parallel
- Test screen
- Shift screen via software
- Black or blue picture background
- Overscan for video and games
- Underscan for multi media and presentations



Saskia - The TV connection cable

- Connection to TV via 21 terminal SCART plug
- Picture output via separate RGB cables
- Compatible with MacPicasso 340, 520 and 540
- Automatically switches-off the computer monitor , allowing the display of PAL-TV resolution 768 x 576 interlaced
- 2 meter length (6 feet)



Paloma - The TV & Video in module

Connections:

• Three video inputs for several formats:CVBS, S-VH (SCY/C) and RF, (UHF)

• Two audio inputs

• Audio output

Input selector:

• Video and audio select by software

TV:

-Synchronised display frequencies: 50, 100, 150 Hz for PAL, 60, 120 Hz for NTSC

• Video text available

• 150 Hz TV

• Easy to use

• Always 24 Bit colour depth for Video, no matter what colour depth your Desktop is running

Sound:

• 3 channel audio mixer controlled by Software

• Line out to connect to your sound system

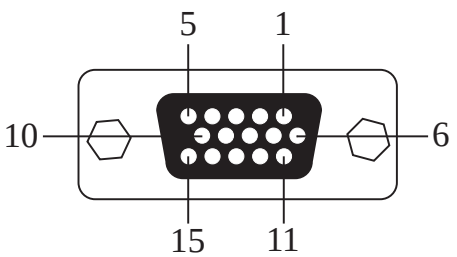
Video decoder:

• Real time video decoder for external video sources (camera, video recorder, SVHS- or CVBS-connection)

Pin assignments for Monitor connectors

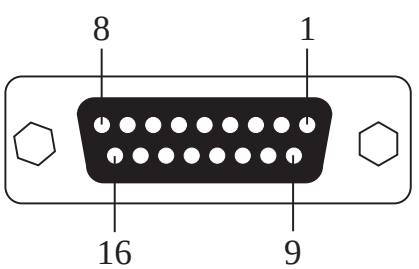
VGA: 15 pin HD-Sub-D-plug

01 red, (analogue)
02 green (analogue)
03 blue (analogue)
04 nc
05 ground
06 red ground
07 green ground
08 blue ground
09 resistor to + 5V
10 Sync ground
11 nc
12 SDA (TTL) DDC 2 data
13 H-Sync (TTL)
14 V-Sync (TTL) DDC 2 clock
15 SCL (TTL) DDC2 clock



Apple Macintosh 15 pin Sub-D-plug

01 red ground
02 red (analogue)
03 composite Sync (TTL)
04 ID0
05 green
06 green ground
07 ID1
08 nc
09 blue
10 ID2
11 Sync ground
12 V-Sync (TTL)
13 blue ground
14 ground
15 H-Sync (TTL)



Pin assignments for Video connectors
S-VHS, Y-C-connector

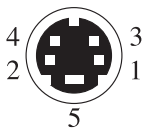
1 ground

2 ground

3 brightness (Y)

4 colour (C)

5 ground



This plug is only in use if Pablo is connected.

Saskia SCART cable (accessory)

04 ground

05 ground

07 blue (analogue 0,7 V, VSS)

08 switching voltage

09 ground

11 green (analogue 0,7 V VSS)

13 ground

14 ground

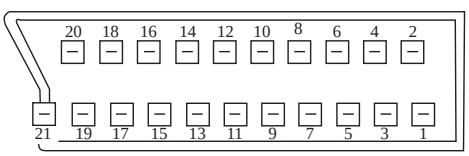
15 red (analog 0,7 V, VSS)

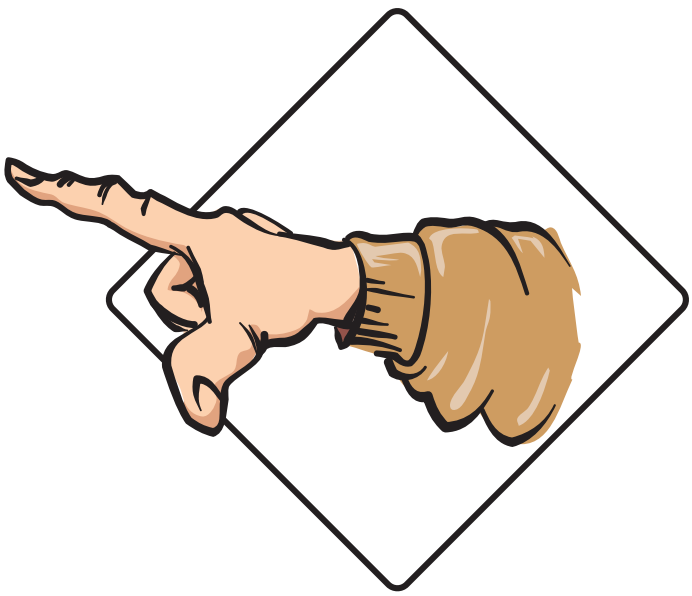
16 sync signal (Composite)

17 ground

18 ground

21 ground





Advice

How to contact us

If you have any problems or questions and cannot find an answer or solution in this manual, please consult your dealer first. In the event that they cannot help you, consult your nearest distributor. If they cannot help you, please feel free to contact our support line:

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We regret any problem you may have with the MacPicasso and we would be grateful for your feedback in such an event.

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