

Picasso96

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WRITTEN BY		April 15, 2022	

REVISION HISTORY

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Chapter 1

Picasso96

1.1 Picasso96 Documentation

Picasso96

A software system for Amiga graphics cards

~ Introduction ~

Hardware requirements

Compatibility

Installation

Usage

Configuration

Developer documentation

Authors

Distribution

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1.2 Introduction

Introduction to Picasso96

Picasso96 is a modular and system friendly software environment for many different Amiga graphics cards. Its main intentions are to provide a solution which is as system and software compatible as possible, transparent and reliable. To be that compatible, only the really necessary functions were patched. This results in very high

level of compatibility.

Another feature of the Picasso96 system is the ability to use several graphics cards at the same time, even cards of the same type.

1.3 Hardware requirements

Hard- and software requirements

Mandatory for the use of Picasso96:

- * Kickstart 3.0 (V39),
- * Motorola MC68020 processor or better,
- * at least one of the following cards
 - :
 - Altais, CyberVision 64, CyberVision 64/3D, Domino, Merlin, oMniBus, Picasso II, Picasso II+, Picasso IV, Piccolo, Piccolo SD64, Pixel 64, Retina BLT Z3, Spectrum 24/28 or an UAE (the Amiga emulator available for different host systems like for example PCs running Linux or Windows (TM)) installation with M68020 and Picasso96 support.

Why are these requirements mandatory?

- * Kickstart 3.0 is needed because Picasso96 is installed as system friendly as possible using features only Kickstart 3.0 provides.
- * A 68000 processor is not supported because it does not offer enough computing power to use a graphics card (larger displays need more computation - it would get unbearable slow). Therefore, parts of the code have been especially written for the MC68020.
- * The above mentioned cards are those which are supported by June 1999. Others can be adapted on request soon.

optional, advised:

- * a hard disk,
- * some extra RAM,
- * a (state-of-the-art) VGA monitor.

1.4 Supported Cards

Supported Cards

Altais:

The Altais is the graphics card built into the Macrosystem Draco Amiga clone. It practically is a Retina BLT Z3 redesigned to use the bus system of the Draco.

CyberVision 64:

The CyberVision is a quite attractive modern card featuring a S3 Trio 64 chip and ZorroIII bus interface. The driver has initially been

developed by Michael Teske, who also did the CyberVision 64 support for NetBSD.

CyberVision 64/3D:

The CyberVision is a modern card featuring a S3 ViRGE chip and autosensing ZorroII/III bus interface.

Domino:

The Domino is a quite old system, too, which consists of a ZorroII card and a ISA VGA card on its back. It uses a HiColor15-DAC.

Merlin:

The Merlin is a ZorroII/III graphics card using a Tseng ET4000W32 and a TrueColor DAC. It offers some features the Amiga has, too: it has a hardware sprite with three independent colors and a fast blitter with three sources.

oMniBus:

The oMniBus VGA system consists of a ZorroII to ISA-Bus bridge and a ISA-VGA card. Currently supported VGA cards are those based on a Tseng ET4000AX or Tseng ET4000W32 VGA controller and a Sierra S11483 HiColor15-DAC, a Sierra S15025 TrueColor-DAC or a Music MU9C4910 TrueColor-DAC. Other DACs probably work in CLUT (palette oriented) mode, but will probably fail to display Hi- and TrueColor modes. The oMniBus is quite old and not state-of-the-art, but offers rather good picture quality.

Picasso II/III+:

The Picasso II is a ZorroII graphics card using a Cirrus GD5426 or GD5428. It is quite common. The PicassoII+ is a redesign of the Picasso II.

Piccolo:

The Piccolo is a ZorroII/III graphics card using a Cirrus GD5426, too. The developers of this card (and the Spectrum) decided to exchange the signal lines for the red and green components of the RGB signal. This leads to the fact, that the Piccolo (and the Spectrum) offer a RGB true color mode whereas the Cirrus chip normally only offers a BGR mode. I guess, this was done because the EGS system, which is often used with these cards, needs RGB.

Piccolo SD64:

The Piccolo SD64 is a ZorroII/III graphics card using a Cirrus GD5434. This is a 64 bit controller offering high graphics performance. The card is quite similar to the Piccolo and the Spectrum. The driver has been developed by Niels Knoop who also did lots of work for the other Cirrus drivers.

Pixel 64:

Like the Piccolo SD64, the Pixel 64 uses the Cirrus GD5434. This board has been designed to work with the Ateobus A1200 expansion system by Ateo Concepts.

RetinaBLT Z3:

The RetinaBTL Z3 uses a very powerful graphics processor with a versatile blit engine. Unfortunately it comes without an automatic monitor switch which makes using it a bit inconvenient.

A driver for this card is currently being developed.

Spectrum 24/28:

The Spectrum is very similar to the Piccolo (read notes above).

Not supported Cards

Retina Z2:

This is a quite old card which does only support segmented memory accesses which is not supported by Picasso96 for speed reasons. So, this card will probably never be supported.

CyberVision PPC:

BVision PPC:

We don't have such boards and not enough documentation to write a driver. Contact us if you do have documentation, knowledge and time to write a driver for those boards. You will be welcome.

1.5 Compatibility

What kind of software will work with Picasso96?

All programs that handle their graphics using standard system calls and do not modify the graphics memory directly bypassing the operating system.

Direct software support for applications is available namely for:

- * 'Art Department Professional' (by ASDG),
- * Photogenics (by Almathera),
- * ShapeShifter (Apple Macintosh emulator by Christian Bauer),
- * XiPaint (24bit paint program by Thomas Dorn and Herbert Beilschmidt).

Further modules are being developed.

Programs using the CyberGraphics API or the vilintuisup.library work with Picasso96, too, e.g. CyberWindow or ShowGIF.

1.6 Installation

Installation of Picasso96

To install Picasso96 you simply have to use the supplied install script. The software will then be installed automatically.

Attention!

Before installing Picasso96 you will have to disable or remove your previously used graphics card software, if any. We regret that there is no way to use different graphic card software systems at the same time.

Please consult the documentation of your software about disabling or uninstalling.

If you use the old Picasso software, then you will have to do this:

- * Remove the file named Picasso from the Devs:Monitors or WBStartup directory.
- * Remove the file village.library from the Expansion or Libs directory.

If you use CyberGraphX, do this:

- * Remove all CyberGraphX card drivers from Devs:Monitors or WBStartup.

Picasso96 drivers for application programs

The Picasso96 application drivers and their individual install scripts can be found in the Drivers directory of the distribution or in your Picasso96 home directory if you choose to install them there. Please install them individually.

The Picasso96 files

1.7 The Picasso96 files

The Picasso96 software system

To be able to use Picasso96, some files will have to be installed and configured for your system.

NOTE:

The subdirectory Picasso96 is mandatory!

These files will be installed by the installation script:

```
Libs:Picasso96API.library
Libs:Picasso96/emulation.library
Libs:Picasso96/rtg.library
Devs:Picasso96Settings

SYS:Classes/datatypes/picture.datatype

Prefs/Picasso96Mode
Prefs/Picasso96Mode.info
```

Depending on what kind of graphics card(s) you use one or more of these files:

```
Devs:Monitors/Picasso96      (renamed to the name of your card)
Devs:Monitors/Picasso96.info

Libs:Picasso96/Altais.card
Libs:Picasso96/CyberVision.card
```



```
Libs:Picasso96/CVision3D.card
Libs:Picasso96/Domino.card
Libs:Picasso96/Merlin.card
Libs:Picasso96/oMniBus.card
Libs:Picasso96/PicassoII.card
Libs:Picasso96/PicassoIV.card
Libs:Picasso96/Piccolo.card
Libs:Picasso96/PiccoloSD64.card
Libs:Picasso96/Pixel64.card
Libs:Picasso96/RetinaBLT.card
Libs:Picasso96/Spectrum.card
```

Depending on which kinds of VGA graphics chips are used:

Picasso II(+), Piccolo and Spectrum 24/28 need:

```
LIBS:Picasso96/CirrusGD542X.chip
```

Piccolo SD64 and Pixel 64 need:

```
LIBS:Picasso96/CirrusGD5434.chip
```

Picasso IV needs:

```
LIBS:Picasso96/CirrusGD5446.chip
```

CyberVision 64 needs:

```
LIBS:Picasso96/S3Trio.chip
```

CyberVision 64/3D needs:

```
Libs:Picasso96/S3ViRGE.chip
```

Domino and oMniBus:

```
LIBS:Picasso96/TsengET4000.chip
```

Merlin and oMniBus:

```
LIBS:Picasso96/TsengET4000W32.chip
```

Altai and Retina BLT Z3:

```
Libs:Picasso96/NCR77C32BLT.chip
```

A test program:

```
Picasso96/Debug/CheckBoards
Picasso96/Debug/CheckBoards.info
```

These guide files:

```
Picasso96/Picasso96_deutsch.guide
Picasso96/Picasso96_deutsch.guide.info
Picasso96/Picasso96_english.guide
Picasso96/Picasso96_english.guide.info
```

Application drivers:

The

```
ADPro
driver:
ADPro/Savers2/Picasso96
```

```
Photogenics
  driver:
Drivers/Photogenics/data/GIO/Picasso96.gio
```

The

```
ShapeShifter
  video driver:
Drivers/ShapeShifter/Video Drivers/Picasso96
```

```
XiPaint
  driver:
Drivers/XiPaint/libs/xout_g.library
```

1.8 Picasso96 usage

Usage of the Picasso96 system

After installing Picasso96 and rebooting, simply select one of the new screenmodes for your WorkBench and other programs which can use them.

If you experience problems with Picasso96, use the CheckBoards utility to see whether your board has been identified and configured properly. If this is the case and you do not get any DisplayID's at all, you should try using Picasso96Mode to attach an existing setting to your board. Please start Picasso96Mode, select a setting in the upper left listview gadget and select the menu "Attach Setting to" to configure this setting to use your graphics card. Quit Picasso96Mode using the "Save" button and reboot your Amiga.

1.9 Configuration

Configuration of Picasso96

There are three ways to configure Picasso96:

~The tool types of the monitor files

~ The environment variables

Picasso96Mode

1.10 Tool types

The tool types of the monitor files

The monitor files, which will be installed in Devs:Monitors and get the name of their graphics card for easier identification have tool type values for their individual configuration:

- BoardType: mandatory, selects the type of the board (e.g. PicassoIV)
- IgnoreMask: optional, speeds up certain blitter functions on the boards using Cirrus VGA chips. But be warned: this mode is not entirely compatible to the native Amiga graphics system and may produce incorrect results.
If you want Picasso96 to scroll equally fast with the PicassoII as the old software did, you will have to set this tool value to 'Yes'!
Defaults to 'No'.
- BorderBlank: optional, switches screen border (default: like system).
- BigSprite: optional, when set to 'Yes', the sprite will be rendered twice as big as normal.
- SettingsFile: optional, defaults to 'DEVS:Picasso96Settings'.
- SoftSprite: optional, if set to 'Yes' then use software sprite in all modes.
- DisplayChain: optional, if set to 'No', the original Amiga signal will not be switched through when active. Useful for systems with more than one monitor and graphics boards. Defaults to 'Yes'.
- NoBlitter: if set to 'Yes', the blitter on the graphics board will not be used at all. Using this feature will hurt the graphics performance considerably! Normally, there is no reason to set this tool type, so use it only if you have serious problems otherwise. If this helps, contact the Picasso96 authors and describe your problem.
- NoPlanar2ChunkyBlits: currently not used. Obsolete.
- System2ScreenBlits: if set to 'Yes' enables the use of blitter operations that require extra data fed by the CPU, for example the color expansion blits used for BltTemplate() and Text(). Otherwise the extra CPU data is transferred to a extra buffer on the board first and the blit then performed as a screen-to-screen blit. On some systems system-to-screen blits can cause severe problems. Therefore this switch defaults to 'No'. Currently only supported with Cirrus VGA chips.
- GrantDirectAccess: if set to 'Yes' enables applications direct access to onboard bitmaps that would normally not be available due to hardware limitations (e.g. the bitmap types of the current screen and the one accessed are incompatible for concurrent access). Helps some really stupid direct access applications like Macintosh emulators. Use only when really
-

necessary. Be warned that other applications might be negatively affected, too.

FakeNativeModes: if set to 'Yes', the default Amiga screen modes that would use the Amiga chip set are replaced by a 640x480 chunky mode with 31 kHz that uses this board. Makes most sense to be used on a system where the native Amiga modes are otherwise not available (e.g. monitor does not support 15 kHz, no flicker fixer either or monitor has only one input and the graphics card does not show the Amiga signal when inactive...).

1.11 Environment Variables

Run time configuration with environment variables

Some features can be activated by environment variables. Changing one of the variables immediately takes effect. They can be set by calling `SetEnv Picasso96/<variablename> <value>` from a shell window. You might have to create the `ENV:Picasso96` directory first because this is not automatically created.

Available variables:

AmigaVideo: if set to '31kHz', the Amiga chip set will be programmed to a display timing like with the Amiga MULTISYNC monitor. This enables the use of high quality audio sample rates but might be harmful for a monitor attached to the Amiga video signal connector that is not compatible with a line frequency of 31kHz.

BlackSwitching: if set to 'Yes', the display will change to a black video signal if a screen change cannot be performed immediately. This might look a bit nicer.

DirectColorMask: if set to 'Yes', blits which do not use all bitplanes of the bitmap (e.g. 1 plane Amiga scroll operations which are actually more effective on the planar based native chip set) will be emulated by CPU instead of blitting all planes at once ignoring the request to blit only a few bit planes.

DoNotSetMMU: if set to 'Yes', some MMU optimisations on 040 and 060 based systems are not performed. This will lead to a performance reduction to some degree but might be necessary with certain system setups. Experiment with this if you keep getting problems that seem to be specific for your system only.

ShowModes: with this feature you can manipulate the way certain display modes are shown or hidden in the system screenmode requesters. If set to 'Essential', only the really different screen modes are shown, e.g. a 8bit chunky mode, one HiColor, one TrueColor and one TrueAlpha (if available). To see all different screen modes, set it to 'All'. To activate only a few of them you can look up the `Picasso96.h` include file from the develop archive and or all of the RGB formats you want to see together (use the `RGBFF_#?` definitions). Now convert this mask

to a numerical value and set the variable to it. For example: `$0e=14=%11110` (hexadecimal, decimal and binary representations are valid) would only allow 8bit chunky and the two TrueColor flavors.

PlanarOnlyDIPFDBUF: when setting this variable to 'Yes', only the native planar screen modes will be marked as capable of double buffering (used for animation players) in the display info database. Primarily important if you create animations with PPaint, because its animation player has serious bugs that allow him to work only on native screen modes. The rest of PPaint is not affected from this problem.

DisableAmigaBlitter: if set to 'Yes', all blit operations that would normally be passed to the Amiga blitter are replaced with CPU routines. This can help avoiding problems in some cases but is considerably slower on native Amiga screen modes.

1.12 Picasso96Mode

Picasso96Mode: the Picasso96 configuration program

Picasso96Mode is used for adjusting and creating display modes. It is completely GUI driven.

In the upper right corner you can see four drag-and/or-drop boxes which allow you to:

- * create a new object (can be setting, resolution or mode depending on which listview you drop it into),
- * copy an object to the internal clipboard for later use,
- * duplicate an object and
- * delete an object.

You can drag any item in each of the list views by clicking on it and leaving the list view to the left or right while holding the left mouse button pressed.

Before you can display any mode you have to use the menu to attach the current setting to a specific card.

In order to activate a resolution or mode you have to double click using the mouse into the listview at the position of the object. If you double click once again, the resolution or mode is made inactive again. Only active resolutions and modes are visible for the rest of the system.

To edit a mode, you have to click on the "Edit" gadget which will bring up a test display using the current mode. You now can change the display using the cursor keys:

- * change the view position (using only the cursor keys),
- * make the border smaller or wider (when also pressing a SHIFT key) or
- * change the size of the display area (when also pressing an ALT key); this will be necessary quite often.

The gadget "Test" shows a geometrical test display with the

difference that you cannot change the mode. This is primarily used to adjust your monitor.

Finally, you should save the changed configuration and reboot, to use the changed settings.

1.13 Picture DataType

Picture DataType

The original V40 picture datatype does only support planar and therefore is not usable with chunky screens. The picture.datatype in the distribution solves this problem and supports the v43 extensions.

1.14 Art Department Professional

Picasso96 ADPro driver

"The Art Department Professional" is supported via a saver which can be controlled via command line arguments. The template is: "TRUE/S,HI/S,R=RENDERED/S,B=BOARD/N,AUTO/S".

TRUE: allow only 24 bit TrueColor modes,
HI: allow only 15 and 16 bit HiColor modes,
RENDERED: allow only 256 color CLUT modes,
BOARD: use only specific board. Parameter is board number,
AUTO: automatic mode selection, i.e. no user interaction.

Installation: copy Picasso96 to the "Savers2" directory of your ADPro home directory.

1.15 FliP96

FliGRF FLI and FLC anim player

FliP96 is a FLI and FLC anim player that (only) supports the Picasso96 software.

FliP96 supports these command line arguments:
FILE/M,DISK/S,RAM/S,ONCE/S

FILE: file name(s) of the anim(s) to play,
DISK: play from disk (slower),
RAM: play from RAM (faster, default),
ONCE: play anim only once (default: loop mode).

Installation: copy FliP96 anywhere you like (preferably a directory in your shell command path).

1.16 XiPaint

XiPaint driver

The TrueColor paint program XiPaint is supported by means of a so-called output library. Due to changes in internal XiPaint structures this version only works with XiPaint 3.2 or better.

XiPaint is available from:

Thomas Dorn
Kerpengasse 69
1210 Wien
Austria
EMail: tdorn@xipaint.co.at
Fido: 2:310/98.0

Installation: copy the library to the libs directory of your XiPaint home directory.

1.17 ShapeShifter

ShapeShifter

This driver is obsolete because ShapeShifter supports Picasso96 directly in recent versions. The driver does not support blitter acceleration like the built-in driver.

ShapeShifter is available on AmiNet in the misc/emu directory or directly from:

Christian Bauer
Max-Planck-Str.60
55124 Mainz
Germany
EMail: cbauer@iphcipl.physik.uni-mainz.de

Installation:

If you still want to use the external driver, then copy the file ShapeShifter/Picasso96 to the "Video Drivers" directory within your ShapeShifter home directory. Choose Picasso96 as external video driver from the ShapeShifter setup window.

1.18 PhotoGenics

PhotoGenics driver

For PhotoGenics (from Almathera) exists a saver module. It has been checked with PhotoGenics 1.2 only, but should work with other versions, too.

Installation:

Simply copy Picasso96.gio to PHOTOGENICS:data/GIO.

1.19 emulations.library

Support for other graphic card software systems

The enclosed emulation.library is a special library providing support for foreign standards like the CyberGraphX or vilintuisup.library applications programming interfaces (API) which are used to create true color displays with Intuition (for example ImageFX, Photogenics or CyberWindow).

Many programs relying on the documented library functions only should work without any problems. Those assuming a certain internal structure and representation of data within the library are likely to fail (e.g. picture.datatype V43 from Ralph Schmidt).

Installation: simply copy the emulation.library to LIBS:Picasso96

1.20 Developer support

You want to support Picasso96 with your own software?

The developer archive can be found on the Picasso96 home page

<http://picasso96.home.pages.de/>

alias

<http://picasso96.cogito.de/>

If you have no Internet access,

I

could send you the

current archive.

Please send me a mail if you develop any driver which uses Picasso96 directly so that I know about it. If possible, send me a complete and working set of your application for testing purposes. Thank you!

1.21 Authors

Who created Picasso96?

Tobias Abt

Bessererstrasse 9

89073 Ulm

Germany

E-Mail: tabt@gmx.de (prefered)

WWW: <http://home.pages.de/~tabt/>

IRC: [tabt@#AmigaGer](#)

and

Alexander Kneer
Masurenweg 6a
89233 Neu-Ulm Pfuhl
Germany
EMail: alexander.kneer@gmx.de

Drivers:

CyberVision64 and S3Trio64: Michael Teske
PiccoloSD64 and CirrusGD5434: Niels Knoop

Translations:

italian: Mario Dell'Oca
finnish: Mikko Virtanen

1.22 Distribution

How can you get Picasso96?

Picasso96 is ShareWare. The ShareWare fee is DM 30 or US \$20. Please send the money cash or via international money order to:

Kneer & Abt GbR.
Masurenweg 6a
89233 Neu-Ulm Pfuhl
Germany

Please understand that we can't send individual acknowledge letters due to the high amount of work involved, but we will you send a short email if you want. If you also want the latest Picasso96 and developer archive on disk, send additional DM 6 or US \$4. Don't forget to supply your name and address.

You can find Picasso96 on the Internet at the Picasso96 WWW home page :

<http://picasso96.home.pages.de/>
alias
<http://picasso96.cogito.de/>

or in the AmiNet e.g.:

<ftp.uni-stuttgart.de:/pub/systems/amiga/aminet/gfx/board/Picasso96.lha>

Please send bug reports to:

tabt@gmx.de (due to the fact that I am the only one to read and answer those emails, I can not guarantee that I will find the time to reply to every mail sent to me...)

If you have any trouble with Picasso96:

send email to the Picasso mailing list, I hope you will find a helpful soul... Please, do not write directly to me, I am reading the mailing list, too, and am very busy...

If you are interested in joining the Picasso mailing list, send an email with "Help" in the body to majordomo@ninemoons.com. If you simply want to subscribe, send "subscribe Picasso" instead.
