

Domino Graphics FAQ

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version 1.0

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Introduction To Domino

Domino was produced by Village Tronic, today famous for Picasso II/II+ and Picasso IV, but it was distribute by X-Pert Computer Services.

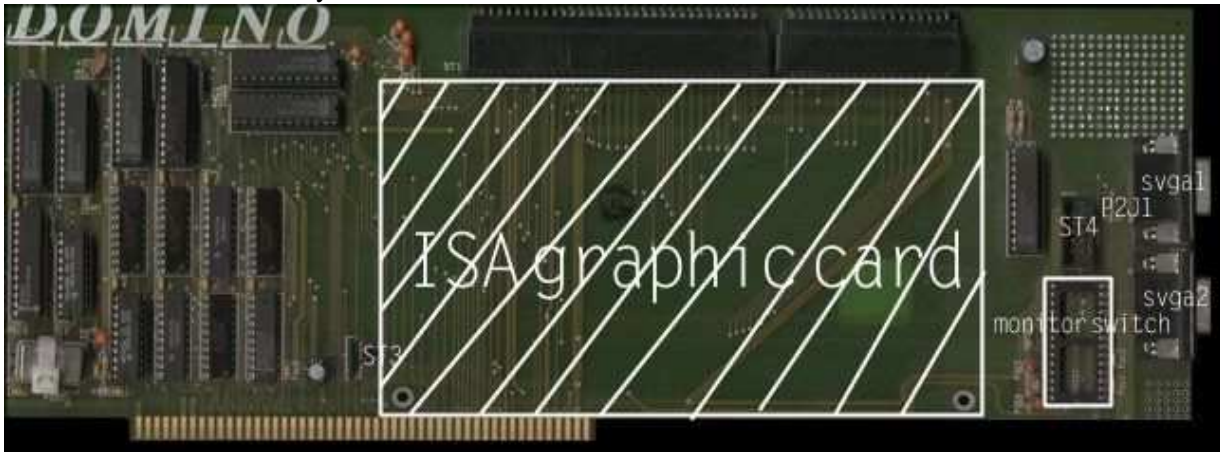
The Domino graphics was one of the first Amiga graphics card that was affordable by hobbyist amiga user. At the time when the Domino was released into the Amiga marked the Commodore A3000 was the top Amiga model, with it`s ECS chip set and flickerfixer it was able to do 640x512 in nonlace but it was still limited to a 12bit palette and Max 16 colours in the 640x512. The alternative was ether a graphics card such as the Opalvision, Impact vision, Harlequin or a framebuffer. A framebuffer gave you the ability to see true colour images on your Amiga, they where not usable for displaying programs in higher resolutions or colours. The graphics cards where all beside of being very expensive produced with video production in mind hence manage only normal video resolutions. So there was a demand for a cheap alternative to graphic cards and the of little use framebuffers, Village Tronic from Germany then produced the first graphic card in modern sense that could give 24bits and a high refresh rate, It was introduced at a price of DM 4000,- for a 2mb version!. Shortly after that followed cheaper cards such a Domino, Retina, Omnibus and Rainbow. Of those cards where Retina the most popular, but due to the Segmented memory of the Retina it is of little use today other that using custom viewers or EGS. But the Domino is still today a good alternative to AGA, the memory access might be slower that the chip memory access on an AGA machine, but it is able do 15bit and higher resolutions. Both Cybergraphics V2 and Picasso96 supports the domino graphic card, giving access to a Hugh number of applications that use cgx or P96.

The Domino hardware

The Domino graphic card consists of a Zorro 2 card and a ISA ET4000 based graphic card, the later is mounted in a isa slot on the zorro card. The ISA graphic card is a 1mb version using a ET4000AX graphic chip and a high colour DAC. The ISA card is placed in such a way that the Svga connector needs a small cable routing the signal down onto the Domino zorro2 card, at a 10 Pin conector(ST4). The Domino also features a monitor switch eliminating the need for an extra monitor as it is need by Retina and Cybervisionppc. The monitor switching is take care of by a Siliconix DG894.

Apparently there existed at leasted as a prototype, a version of the Domino that could do 24bit graphics. As far as

I know it was called Domino 16M, but I guess that it would have used a another type of ISA graphic card and had more that 1mb memory.



(I have left the ISA card out as I don't have the original version of it and as you can see my domino card does not have the DG894 monitor switch so until I find such a beast I have use a two monitor system.)

The Svga1(the upper) is the output from the graphic card, and Svga2(the lower) is for the pass through cable. The small conector(ST4) to the left of P2J1 is for the small cable that feeds the signals from the ISA graphic card.

The Domino board itself is a bit to big for Amiga3000 and Amiga4000, as it was made with the Amiga 2000 in mind. If you remove the card mounting rails, it can be made to fit nicely.

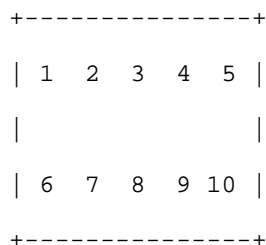
Domino is able to delive this number of colours in the following resolutions.

With #n colours the maximum resolution is:

Colours	Max Resolution
16	1280 x 1024
256	1152 x 900
15bit	800 x 600

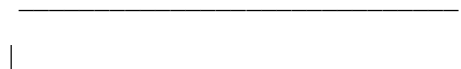
How to make a new cable for the Domino board.

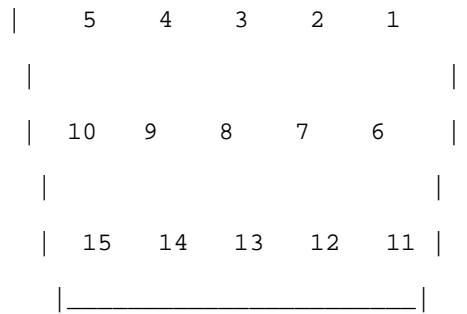
The ten-pin connector on the Domino.



VGA connector on ISA card.

Female HDD15 VGA Connector





Pin 1: Red Video

Pin 2: Green Video

Pin 3: Blue Video

Pin 4: Ground

Pin 5: Unused

Pin 6: Red Ground

Pin 7: Green Ground

Pin 8: Blue Ground

Pin 9: Unused

Pin 10: Ground

Pin 11: Ground

Pin 12: Unused

Pin 13: Vertical Sync

Pin 14: Horizontal Sync

Pin 15: Unused

In the next table, the pin-number on the Zorro-side goes first then the pin where it should be soldered onto the VGA-socket.

1	->	14
2	->	13
3	->	10
4	->	8
5	->	7
6	->	6
7	->	3
8	->	2
9	->	1

Red doesn't go anywhere. Hope this is making sense.

Jumpers

On the Domino card there is 3 jumpers, two at ST3 and one at P2J1. I only knows the function of the last one. P2J1 -- Is for feeding the Masse(GND) to pin 5 the Upper Svga connector on the Domino, If you are having troubles with your monitor try jumping this jumper.

Software

The Domino was released with a custom Workbench emulation, I don`t know anything about it as I never saw it, If you have it and the original install discs please [email me](#). As most graphics cards from that era there also exist an EGS driver for the Domino, but it is really only useful for older software. Both Picasso 96 and Cybergraphics version 2 has support for the Domino, but it seem that Cybergraphics has dropped support for it in the later version. Using Picasso96 together with a Domino board, is a fine expansion for any bigbox Amiga such as 2000,2500,3000 or any other zorro equipped Amiga.

There was a special version of TV-Paint for the domino aswell a softdrivers for AdPro, Real3d, Vistapro and some other programs. But if you are using your Domino with Picasso96 or Cybergraphics you don`t need them anymore.

Domino can be used in any Amiga with 68020+, a free Zorro II slot and OS 2.x for the original Domino workbench emulering or EGS and 3.x for Picasso96 or Cybergraphics. You would need at leasted an 68020+ as Both the original Domino workbench emulation and EGS/CGX/P96 all needs it.

Programering for the Domino

The Domino is a autoconfig board, and it will add two entries to the list of boards in the system.

2167/1 is memory, mapped directly to the lowest 1 MB of ISA-Address space.

2167/2 is I/O. I/O-Writes above 0x8000 are special "trigger" ones.

I/O byte accesses work as directly to the ISA.bus for 16 bit devices. 16 bit access is byte-swapped. To access odd bytes on 8 bit IS-devices (e.g. Ser/Par/...) you need to access address + 0xff.

instead of

```
*((UBYTE *)0x03cf) = 0;
```

use

```
*((UBYTE *)0x13ce) = 0;
```

The above mentioned "strobe"-writes are

```
0x8000 : Gfx, SpecialMapping, StandardCycle
```

```
0x9000 : Amiga, SpecialMapping, StandardCycle
```

```

0xa000 : Gfx,    StandardMapping, StandardCycle
0xb000 : Amiga, StandardMapping, StandardCycle
0xc000 : Gfx,    SpecialMapping,  CycleSplit
0xd000 : Amiga, SpecialMapping,  CycleSplit
0xe000 : Gfx,    StandardMapping, CycleSplit
0xf000 : Amiga, StandardMapping, CycleSplit

```

```

"Gfx":           Video-Signal from Graphic board at output
"Amiga":        Video-Signal from Amiga is passed through
"StandardMapping": Standard Memory Mapping
"SpecialMapping": Special Memory Mapping
"StandardCycle": 16bit Memory-Cycles are performed normal
"CycleSplit":    16bit Memory-Cycles are performed in two 8 bit cycles

```

The Reset state corresponds to 0xb000.

There's just a byte-write to IOBase+"magicaddress" needed, the data are don't care.

The following is taken from a email I got from Klaus Burkert [_crest\(a\)arkon.capella.de](mailto:_crest(a)arkon.capella.de)

Regarding the other attributes, the Domino was the only card (at least I know of no other) that could map its four planes one after each other linear into the Amiga's address-space. This was accomplished by fooling the Tseng ET4000 into a mixed mode where it acted internally in planar mode but represented its memory externally in chunky-mode. But the four planes were interleaved with the two lowest address bits acting as plane selector. We implemented a special mapping to "rotate" the 20bit address by two bit making the two highest Amiga address bits act as plane-selector (Bit 19-2 became 17-0 and bit 1-0 became 19-18). With "SpecialMapping" this was enabled, "StandardMapping" was used for all chunky modes. I/O access was not affected. But due to the encoding of transfer size on ISA, this left problems. i.e. when writing 16 bit to address 0/1, you want to write to the first and second byte in plane 0. But it ended writing byte 0 in planes 0 and 1 which wasnot the desired effect. So we added the feature to split the 16 bit access into two 8 bit accesses which cured the problem. We even implemented the "split-read" that combined two internal 8 bit reads into 16 bit of data, when 16 bit where read by the Amiga... "CycleSplit" enables this feature "StandardCycle" disables it. I/O access was not affected. That's whay that hell of buffers, latches and PALs/GALs are on that board...

Problems

It seem that the Domino has some troubles with Zorro memory cards, I triede to install a GVP hc8+ card with 6mb ram in my Amiga 3000 but if the domino was placed in a zorro slot before the Gvp card then the memory on the Gvp did not show up in Autoconfig. But If I swapped the Card ordre then the GVP card and Domino was found, but the Domino did only show some garbage.

Can I Use Domino with other ISA cards?

Using the Domino as a simple Zorro to ISA bridge was my main reason for find a working Domino. Here is what I have found out so far, by talking to Domino Users and the designer of the Domino Board.

You might be able to another ISA card instead of the graphic card. there is access to isa I/O space from 0x000 to 0x8000(32kb) and 1mb mapped directly to the lowest 1 MB of ISA-Address space. But the ISA connection on the Domino is missing the following signals.

Interrupts

BALE

14.318 MHz clock

Feeding a clock signal to board is` t that difficult, but I think that it is impossible to do something about the missing interrupts :(But the 14.318 Mhz clock is only need by some gfx card as it used for generation the pixelclock from.

And without the interrupts I can`t see how someone could make a ethernet card or similar work through a Domino.

Disclaimer

Neither myself or any of those who have helped put this faq/guide together can be made responsible for any damage to your system, youself, your dog or your local football team caused by the use of infomation gathered from this faq/guide.

Credits

Compiled in 1999 by Jacob Dahl Pind - [Rachael_\(a\)gmx.net](mailto:Rachael_(a)gmx.net)

I would like to thank the following people.

Klaus Burkert - [crest\(a\)arkon.capella.de](mailto:crest(a)arkon.capella.de) , designer of the Domino. for answering my many questions.

Flemming Steffensen [fsteff\(a\)bigfoot.com](mailto:fsteff(a)bigfoot.com) , for helping find the maker of Domino.

Jonas Thorell [jonasth\(a\)bahnhof.se](mailto:jonasth(a)bahnhof.se), for helping me make a new Cable for my Domino.

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