

technical data Indivision AGA 1200

Indivision AGA is installed over the Lisa chip of the A1200. Cut-outs in the circuit board allow installation of other products like IDE-fix express and Lyra 1200. The monitor is connected through an adapter cable (included). The connector is a standard 15-pin high-density Sub-D as commonly used in the PC world.

Indivision AGA only uses one connection to the Amiga, and that's on the Lisa chip. Power and all signals are taken from this chip. Despite the original Amiga's monitor sync signals not being available on this chip, Indivision AGA can work without additional connections (for example to Alice, as seen on other products). This is accomplished by deriving the sync signals from the inter-chip communication of the AGA chipset.

Indivision AGA supports border blanking. This requires taking another input signal into account that could be considered a 25th video bit. If you will, Indivision AGA is the world's first 25-bit flickerfixer.

The maximum input pixel clock is 28MHz, which is equivalent to the highest resolution called Super Hires. The maximum output pixel clock is 71MHz, which allows all output screen modes to be 60Hz or faster for the picture refresh rate. The input accepts progressive scan and interlaced video, whereas **the output always produces progressive scan pictures**. The user can choose between an output pixel clock of 2.5 times the Amiga pixel clock (*Async scan mode*), or an exact double of the Amiga pixel clock for vertical synchronisation of the input- and output pictures (*Vertical Sync mode*). This will eliminate tearing effects.

The framebuffer is composed of 16MBytes SD-Ram. Only 12MB are addressable by the central logic, 4MB are not used at all. The organisation of the memory is a maximum buffer size of 2048 by 2048 pixels. Only the required window is displayed, the rest of the memory cannot be used for other purposes. Since SD-Ram only has a single data port, reading and writing must be decoupled. This is accomplished with two Fifo buffers and an elaborate dual-port SD-Ram controller that runs at 111MHz. During Fifo access, Indivision AGA transports 333 megabytes per second. The average amount of data that is transported in and out of the memory is well above 250 megabytes per second.

As with previous Indivision models, this product is compatible with Genlock interfaces, which has always been a unique feature of Indivision. Only one other flickerfixer on the market has ever been genlock-compatible in the past 17 years, and that's the Commodore models as seen in the Amiga 3000.

As opposed to other flickerfixers, Indivision AGA does not have a pass-through mode, but instead flicker-fixes every screenmode that it's compatible with.

Supported screenmodes and their output frequencies

| Screenmode name | Async scan mode | Vertical sync mode |
|--------------------------------|-----------------|--------------------|
| PAL: Low Res | 62 Hz | 50 Hz |
| PAL: Low Res Laced | 62 Hz | 50 Hz |
| PAL: High Res | 62 Hz | 50 Hz |
| PAL: High Res Laced | 62 Hz | 50 Hz |
| PAL: Super-High Res | 62 Hz | 50 Hz |
| PAL: Super-High Res Laced | 62 Hz | 50 Hz |
| NTSC: Low Res | 74 Hz | 59 Hz |
| NTSC: Low Res Laced | 74 Hz | 59 Hz |
| NTSC: High Res | 74 Hz | 59 Hz |
| NTSC: High Res Laced | 74 Hz | 59 Hz |
| NTSC: Super-High Res | 74 Hz | 59 Hz |
| NTSC: Super-High Res Laced | 74 Hz | 59 Hz |
| Super 72: High Res | 62 Hz | 59 Hz |
| Super 72: High Res Laced | 62 Hz | 59 Hz |
| Super 72: Super-High Res | 62 Hz | 59 Hz |
| Super 72: Super-High Res Laced | 62 Hz | 59 Hz |
| Multiscan: Productivity | 74 Hz | 59 Hz |
| Multiscan: Productivity Laced | 62 Hz | 50 Hz |
| Euro 72: Productivity | 74 Hz | 59 Hz |
| Euro 72: Productivity Laced | (*) | (*) |
| Euro 36: Low Res | 74 Hz | 59 Hz |
| Euro 36: Low Res Laced | (*) | (*) |
| Euro 36: High Res | 74 Hz | 59 Hz |
| Euro 36: High Res Laced | (*) | (*) |
| Euro 36: Super-High Res | 74 Hz | 59 Hz |
| Euro 36: Super-High Res Laced | (*) | (*) |
| DBLPAL: Low Res | 62 Hz | 50 Hz |
| DBLPAL: Low Res Laced | 62 Hz | 50 Hz |
| DBLPAL: Low Res No Flicker | 62 Hz | 50 Hz |
| DBLPAL: High Res | 62 Hz | 50 Hz |
| DBLPAL: High Res Laced | 62 Hz | 50 Hz |
| DBLPAL: High Res No Flicker | 62 Hz | 50 Hz |
| DBLNTSC: Low Res | 74 Hz | 59 Hz |
| DBLNTSC: Low Res Laced | 74 Hz | 59 Hz |
| DBLNTSC: Low Res No Flicker | 74 Hz | 59 Hz |
| DBLNTSC: High Res | 74 Hz | 59 Hz |
| DBLNTSC: High Res Laced | 74 Hz | 59 Hz |
| DBLNTSC: High Res No Flicker | 74 Hz | 59 Hz |

(*): currently unsupported. Will be implemented with next flash update

More screenmodes can be used with Andre Pfeiffer's Highgfx package, available on Aminet. Check the Aminet for more information:

<http://aminet.net/search?query=highgfx>

Andre Pfeiffer is even working on new screenmodes especially designed for Indivision AGA. Since the input and the output frequencies are totally independent of each other, there's a whole new world of possibilities for screenmode design. Even if the current hardware cannot handle the screenmode at the moment, one important feature comes into play:

Hardware re-configurability

Indivision AGA is based on an FPGA, a programmable logic device that can be re-configured with a different hardware behaviour. This behaviour is stored in a flash memory, which is user-upgradable. Should a screenmode currently be unsupported (either because it's exotic or because it's new), the hardware can be adapted within limits. Individual Computers has multiple products with this technology, and remote upgrade of the hardware – without opening the computer – has been proved to be extremely user-friendly.

The hardware-behaviour is stored in a flash, and we have paid special attention to the update process. Since flash updates are still considered to be critical operations. Indivision AGA is designed in a way that it does not halt the computer with a mangled flashrom (for example due to a power failure during the flash process). The computer starts normally, and the flickerfixer can be brought back to life with an emergency disk that does not require a screen or user-interaction. This emergency disk is not included with the product. You can download it for free from our website, write it to a physical disk and store it in a safe place.

Power saving

Although the Amiga is a pure 5-Volt system, Indivision AGA uses 3.3 Volts as it's main voltage. The core voltage of the FPGA is even 2.5V. Only the clock generator is using 5 Volts. This results in extremely low heat dissipation and low power consumption. In addition to that, the VGA monitor can be put into power-down mode with an adapted screenblinker.

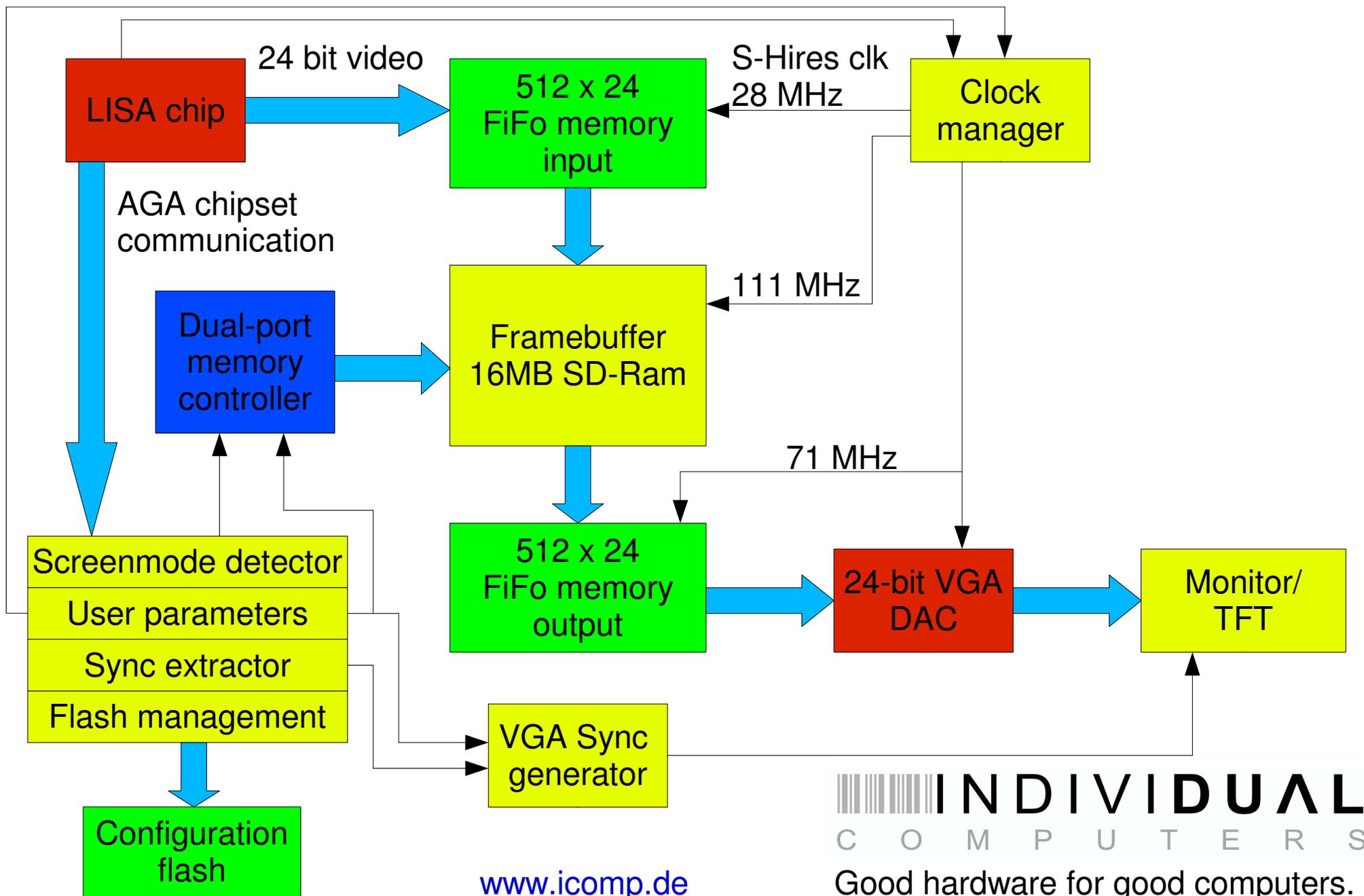
Special attention has been paid to power filtering. Many Amigas are operated with old power supplies these days. Such old power supplies have high ripple voltages that might upset other designs. Indivision AGA is built on a 4-layer multilayer board with five differently filtered power nets for the best possible picture quality.

Environmental

Indivision AGA is RoHS compliant. This means that the complete soldering process is lead-free and no part contains polybrominated flame retardants. This also includes all plastic parts and the cable. The screws on the connector are chrome-VI-free.

All three substances are considered toxic to the human body, therefore Individual Computers has already made the production process RoHS compliant many years before it became the law in Europe.

Indivision AGA flickerfixer structure



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Good hardware for good computers.