

SoftAGA

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REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

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Chapter 1

SoftAGA

1.1 © PWS 1993

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*****
*
*          -----===== S o f t   A G A =====
*                          ©   PWS 1993
*
*          "Bringing the power of the AGA chipset to all Amiga users"
*
* Note: This is a pre-release version of SoftAGA. It is not guaranteed to
*       behave as stated in this documentation, nor can PWS or any other
*       party be held responsible for any damage caused by this program.
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1.2 Introduction

The Super Amiga
 They said it couldn't be done. After six gruelling months in development, over 350,000 lines of assembly code and 5325 cinnamon rats later, the power of the AGA chipset can finally be unleashed on your ECS Amiga. What's more, PWS' own custom HyperAcceleratron(TM) system has been combined to bring you the ultimate software upgrade for your computer: SoftAGA. Features include full AGA emulation including HAM8 on any ECS

machine, and fully transparent operation. Emulation of any 680x0 processor is also supported.

"It'll Never Ship"

In late 1992, Team AGA moved away from the rest of PWS to a secret location codenamed "AlCapone". Normal office hours, regular phone calls, usual interruptions. They worked 35 hours a week. They invented bizarre tricks to drive the 68000, and the old ECS chips to amazing levels of performance. They grew their own. They didn't pay the phone or electricity bills. They were fired, and rehired. They fought with management "The paper clips were always kept in THIS drawer." In the dark, they evolved strange hardware hacks to emulate expensive appliances (A3000 fan became an industrial air conditioner, 2 A500's running at 150Mhz became a toaster). Writing SoftAGA became a more ambitious project than the AGA Chipset itself!

"We have AGA"

Late one night, in February 1993, the engineers powered up our old beat up A500 on which we'd been working for the past 6 months. There was a problem. Yet another motherboard and two power supplies later, the A500 was powered up again, this time sporting a 256 colour Workbench. The AGA A500 was born. After suitable celebrations the race was on to bring the AGA chipset within reach of the 3.5 million other Amiga users worldwide. Before you are the fruits of our labour. We hope you enjoy SoftAGA.

And by the way, the lights are still off at 'Capone.

1.3 Installation

Using SoftAGA

REQUIREMENTS: At least 1.5Mb memory, ECS chipset, KickStart 2.04, WorkBench 2.1.

To install SoftAGA, copy SoftAGA.prefs to your env: drawer, and assign the SoftAGA home volume.

1.4 How it works

The program will patch your KickStart and WorkBench functions to be fully AGA compatible. The kick.patch file is used for this. ←

Development of SoftAGA has been achieved using the latest techniques in PCR (programmable circuit rerouting). By studying each chip in the regular ECS chipset, down at the gate level, we have managed to replicate the various characteristics that make the AGA chipset superior. As a result, certain facilities may be temporarily disabled, such as sound, since the emulation requires the use of the Paula chip to take over some of the new Lisa functions. The CPU takes over most of the other facilities. Normally this would slow the system down considerably, however we have managed to

incorporate an experimental version of our new
HyperAcceleratron(TM)
system (to be available seperately in a few month's time) to ←
enable the

system to reach a suprisingly fast overall speed, even on a stock A500.

The above explains the delicate nature of the AGA emulation that SoftAGA employs. While our competitors have opted for an incomplete simulation (no HAM8 or high resolutions), we have been able to include all AGA facilities in the one package, with only a small amount of effort required on the part of the user in the initial boot parameters.

Although most users expect the ECS chipset to behave in the same way on all machines, our SoftAGA routines operate on the edges of tolerance for most of these components, and so to compensate of varied quality control, it was necessary to allow the user to change some critical parameters in order for SoftAGA to work on all machines. If your settings are incorrect, the simulation will not proceed and a system error may occur (or worse). It is therefore imperative to ensure that these parameters are set correctly for your setup. This is explained in @{" Adjusting Settings "link ← adjust}.

1.5 Settings

(A600 and A500+ treat as A500 for below)

Col_Pri_Ack: (0-63) Must be set to 23 for any A2000 series computer, adding 2 for every external storage present, and 4 for any cards present (including SCSI cards). Must be set to 41 for any A500 series, adding 3 for each motherboard revision above 4. Any external devices plugged into the left side connector must be treated as for the A2000. Must be set to 5 for an A3000, adding as per A2000. Subtract your CPU speed in megahertz.

Sys_Verify: (1-10) Must be set to 1, adding 2 for each CPU revision above 68000. Subtract 1 if you have a 68881 chip, or two if you have a 68882 chip.

Calib_TimeOut: (0-15) Set to 7, subtract 5 if you have an MMU, add 2 for an A500 and subtract the Intel CPU version of any IBM emulators attached.

Def_BitPlanes: (1-8) Don't touch this unless specifically instructed by the prgram.

Currently the 68060 emulation mode is in an experimental form, and should be used at your own risk. This problem will be rectified with the final release of

HyperAcceleratron(TM)

Additionally, the Acceleration setting should only be taken as a subjective measurement of the system's overall speed relative to a standard A500.

In order to use a de-interlaced High Resolution screen (DBL_NTSC or DBL_PAL), you will need to select the correct Coersion settings. This requires a VGA or multiple frequency scanning capable monitor (such as the Commodore 1960). This is a feature of the AGA chipset that is beyond PWS' control.

All other controls are self explanatory. Good luck in the world of AGA!

1.6 HyperAcceleratron(TM)

Details of the HyperAcceleratron(TM) system will not be divulged here, however part of the secret lies in the software control of chip clock speeds. A super-fast oscillation circuit is set up within one of the custom chips, which is then distributed along the buses using a custom propagation system far more advanced than the standard digital pulse method.

1.7 About PWS

PWS is a co-operation of a group of programmers created for the purpose of developing PW quality software with the greater aim of raising the general standard of programming on the Amiga by their efforts. SoftAGA represents the latest in a succession of PWS releases, spanning most areas of Amiga programming.

Other PWS productions include:

GreatChess
PWSInfo
PWSHi-Term
