CYBERSTORM PPC

ANWENDERHANDBUCH

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CONTENT

INTRODUCTION

We would first like to thank you for choosing the CYBERSTORM PPC for the Amiga. You are now the owner of a high quality, mature product, which has not only been tested in extensive trials prior to being brought onto the market, but which also reflects many years of experience in the development of peripherals for the Amiga, especially in the planning of expansion systems. A lot of money has been spent not only in developing and refining this accelerator card but also in the production of the devices and the development of the software. This level of expenditure guarantees that the CYBERSTORM PPC system will meet the highest requirements of quality, security, compatibility and performance. We hope that this product will provide you with countless hours of trouble-free operation. We would ask you to complete and return the registration card accompanying this product. This will enable us to keep you informed of any future expansions or updates to the CYBERSTORM PPC system and of other developments for the Amiga. It will also provide us with important feedback allowing us to develop products for the Amiga which you as a user actually want.

phase 5 digital products, summer 1997

SCOPE OF DELIVERY

On receipt of the CYBERSTORM PPC please check that the delivery scope is complete. The package must contain:

- ***The CYBERSTORM PPC Turbo board***
- ***Two installation disks (PowerUP®-SCSI Disk and PowerUP®-System Disk)***
- ***One CD-ROM***
- ***This manual***

If one of these parts should not be contained, please refer to your retailer.

SYSTEM REQUIREMENTS

Minimum Configuration:

- ***Amiga 3000(T)/Amiga 4000(T) or computer with compatible Processor slot***
- ***8 MByte on the CYBERSTORM PPC installed Fast RAM***
- ***Harddisk***
- ***Kickstart ROM Version 3.x***

Recommended Configuration:

- ***Amiga 3000(T)/Amiga 4000(T) or computer with compatible Processor slot***
- ***16 MByte or more on the CYBERSTORM PPC installed Fast RAM***
- ***Harddisk, CD ROM drive, Kickstart 3.1***
- ***„CyberVision PPC" graphics board (available 4th quarter 1997)***

READ BEFORE INSTALLING THE CYBERSTROM PPC

Before you begin with the installation of the CYBERSTORM PPC, you should first consider the following items:

1. **To function correctly, the CYBERSTORM PPC needs special 68k- and PowerPC - specific software. This software has to be installed before the assembly of the CYBERSTORM PPC. See also paragraph „Software installation".**
2. **If you want to install in the CYBERSTORM PPC into an AMIGA 3000/3000(T), please first read the paragraph "Jumper configurations in the AMIGA 3000/3000(T)" so that you can carry out the correspondingly required jumper configurations on the mother board of the AMIGA 3000/3000(T).**
3. **In order to operate the CYBERSTORM PPC a Kickstart-ROM Version 3.x must be installed.**
4. **To expand your CYBERSTORM PPC with the for the operation of the board necessary storage modules (SIMMs), please read chapter 2 first, as it is easier to install the SIMMs before installing the CYBERSTORM PPC in the computer.**

CHAPTER 1

THE CONCEPT OF THE CYBERSTORM PPC

The CYBERSTORM PPC Accelerator Board – being the first product of the PowerUP® product line to be released – is a very complex dual processor design, in which two different processors – namely the PowerPC processor and the 68k CPU – work in parallel. As this is a true multiprocessing solution, both processors share the complete address space of the Amiga computer system. By use of a comprehensive software library provided with the board, the PowerPC processor is seamlessly integrated into the Amiga's multitasking environment, so that application software for the CYBERSTORM PPC - as well as the other PowerUP® accelerators - can consist of different tasks running on both of the CPUs.

The goal of this solution has been to offer a possibility to upgrade existing Amiga systems with a new and several times more powerful CPU, while maintaining full compatibility to all the existing software – including the Operation System – and the hardware that is installed in the system. To reach this goal we have developed this demanding dual-processor solution, where the customer can even use the 68k processor which mostly will be present on an existing CPU card. With this solution the performance of the new and powerful PowerPC processor can be utilized by software applications which are ported to the PowerPC in part or whole, without the necessity of a complete system change which would include the purchase of all existing components and software applications for the new system.

Software applications which are enhanced to utilize the new PowerPC processor will be able to provide a stunning performance with significant speed increases compared to even the fastest accelerator boards so far available for the Amiga. Because of the way the PowerPC is integrated into the Amiga multitasking environment by use of a comprehensive library, software developers can optimize their programs step by step or in part for the PowerPC - a solution which is highly appreciated by many software developers worldwide who are actually working on PowerUP® enhanced software products. In the long run it is of course also possible to port applications completely to the PowerPC, or to realize operation system solutions on the PowerPC side.

With this functionality the CYBERSTORM PPC - as well as the other upcoming PowerUP® products – represents more than just a powerful processor upgrade solution for the Amiga. It can – and will – also be used as a development platform for future generations of application and operation system software. As a major example, the PowerUP® boards will be a base for the development of future application and operation system software for upcoming projects of phase 5 digital products, namely the ***A\BOX*** computer system. But the PowerUP® product line will also be, on the other hand, the state-of-the art processor upgrade solution for all active Amiga users who expect a performance that is up-to-date for todays and tomorrows demanding applications, and will be strongly supported by phase 5 digital products and many other vendors who are dedicated to support the Amiga and it's user base.

WHICH ARE THE SPECIAL FEATURES OF THE CYBERSTORM PPC?

Among many powerful details, the CYBERSTORM PPC offers the following features that make it a high-end accelerator solution for the Amiga:

Very high sustained memory performance of the PowerPC and the 68k processor

The CYBERSTORM PPC offers a very fast sustained memory transfer (up to 68MByte/sec on the 68060, and up to appx. 160MByte/sec on the PowerPC 604e) and is therefore perfectly suited for applications which have to deal with large amounts of data. As the memory design of the CYBERSTORM PPC is already under the 68060 CPU some 50% faster than the memory design of the CYBERSTORM MkII, it's performance in real world applications can be up to 25% higher (measured with a Lightwave 4.0 test rendering). Unfortunately there are no comparison values available for the PowerPC side, but the sustained memory bandwith is very high when compared to standard PC solutions available on the market today. Because of this high memory performance the board doesn't need to offer a second-level cache option.

Fast PowerPC bus clock:

The PowerPC 604e processor on the CYBERSTORM PPC operates with a 1:3 ratio between the internal clock and the bus clock; the 200 MHz version already operates with a fast 66 MHz PPC604e processor bus. This also supports the fast memory access of the CYBERSTORM PPC.

A powerful Ultra Wide SCSI controller is integrated on-board

The integrated on-board Ultra Wide SCSI controller with a maximum transfer rate of 40 MByte/sec on the SCSI bus offers enormous performance reserves with todays fast storage media, especially the fast harddrives which are available for desktop systems. Applications which are depending on fast access to largest amounts of data can therefore be accelerated significantly. The SCSI controller which is based on the Symbios 53C770 SCSI Sript Processor operates as a DMA busmaster device. A standard 68pin Wide SCSI connector is available for the connection of SCSI devices.

Fast add-on slot

A fast add-on slot, implemented on a high quality connector, is available for expansions. A product which will be available in the fourth quarter of 1997 for this expansion bus is the CyberVisionPPC, a high-performance graphics card which is based on the powerful Permedia2 3D graphics chip. This expansion product will significantly increase the performance of all graphics-related applications, especially those which use the CyberGL 3D library for complex 3D applications.

Comprehensive PPC library

The comprehensive PPC library which comes along with the CYBERSTORM PPC offers substantial functionality to integrate the PowerPC processor into the Amiga multitasking environment. With this method the transparent and parallel operation of the two CPUs is made possible, and the programming and use of software applications that utilizes the power of

both processors is very comfortable. To further support the development of future-oriented and modular structured software a new message system has been developed and integrated into the system with the PPC library.

Other features of the CYBERSTORM PPC:

- *CPU card design which fits into the A3000(T), the A4000(T) and systems with compatible processor slot and mechanical dimensions*
- *Dual processor design based on the PowerPC 604e processor with 150, 180 or 200 MHz*
- *Socket for a 68k companion CPU (necessary for operation), type 68040-25 or -40 or 68060-50*
- *Both CPUs share dynamically (that means, on demand) the access to the bus and into the complete address space of the system*
- *Upgradable with up to 128 MByte of 64-bit wide Fast-RAM, fully autoconfigurating*
- *Startup software in a flashrom which can be updated on demand by software*
- *Fully automatically, jumperless configuration*
- *Comprehensive software package including the PPC library and the CyberGraphX V3 drivers with a PPC-native MPEG library and a PPC-native CyberGL 3D library*
- *High quality manufacturing and components, made in Germany*

WHICH KIND OF APPLICATIONS IS THE CYBERSTORM PPC SUITED FOR?

Basically, the CYBERSTORM PPC can be used for all kind of applications. Applications that will take most advantage are of course those kind of applications which demand high computing performance - especially the so-called multimedia applications, all kind of graphic or 3D programs, sound editing, animation or stunning games as well. Many developers worldwide are working on applications supporting PowerUP® which belong into these categories. But also for own programming purposes of hobbyists or e.g. for scientifical applications the CYBERSTORM PPC is well suited with it's high processing power.
Applications which are mainly operation system or user interface based - such as user interface and control programs, tools and utilities, or also e.g. word processors and similar types of applications - will initially benefit from the faster performance of the 68k CPU because of the faster memory. But even these kind of programs may be optimized for the PowerPC to offer significantly increased performance for special functions, such as e.g. data compression and decompression, font engines or postsript visualisation, or the implemenation of multimedia functionality in such programs in general - just to name a few possible applications.

WHICH SOFTWARE IS AVAILABLE FOR THE POWERUP® ACCELERATORS?

To support the availability of powerful applications, phase 5 digital products has supported Amiga developers worldwide with developer systems and developer support. Some results of this development program are available in form of software products which are ready for PowerUP® at the time the first CYBERSTORM PPC Accelerator Boards are shipping. Other important developments can be expected in the very near future, as with the release of the CYBERSTORM PPC additional developers have the product available to start development or optimization of PowerUP® software, and as the developers who have been working with developer prototypes now have release products available which reveal the full power and performance of this new product generation. Software development is also supported by the new relaeses of the PPC library with new functionalities that allow a rapid development of PowerUP® optimized software applications.

With the PowerUP® product line, the PowerUP® system software development and our developer support program, however, we do not only want to offer and support products that actually increase the performance of the Amiga and applications running on it, but also want to offer a path to the future. Therefore, we also support developments of alternative operation systems such as e.g. Linux, which can run fully on the PowerPC side of the PowerUP® boards. With the demo software and development tools that come along with the PowerUP® boards (GNU C compiler with PowerUP® support, examples, tools etc.) the system is also well suited for all developers who want to do some hobby programming or also real personal software development on their own. We hope that we can support the use of the Amiga as a computer for the creative power user with these steps.

On the CD-ROM supplied with the CYBERSTORM PPC you will find also infos about and/or demo versions of software applications which are available for PowerUP®, or are being finalized, prepared or in planning. From autumn 1997 on you can also find the latest information about PowerUP®, available products and related projects on the comprehensive web pages under ***http://www.phase5.de.***

CHAPTER 2: INSTALLATION OF THE CYBERSTROM PPC

ATTENTION!

Before starting with the installation of the CYBERSTORM PPC you should by all means read this manual, otherwise the board or the computer could suffer damage. Furthermore, the software has to be installed before beginning to install the CYBERSTORM PPC. Please also refer to our warranty conditions (chapter 6) in respect to unadequate handling and unauthorized repair.

If hard disks or other storage media on which there are unsaved data are connected to the system into which the CYBERSTORM PPC is going to be installed, we urgently recommend to make a safety backup of the hard disk(s) BEFORE installing the CYBERSTORM PPC. Each new connection of hardware accessories bears the risk -if ever so small - of a damage to sensitive components or malfunctions due to improper installation or handling, and in consequence of such a damage or malfunction, data losses could occur. If the backup on floppy disk seems too slow because of a large amount of data, ask your retailer if he could take over the backup (e.g. on a streamer) and re-installation for you, or if you could borrow a streamer, possibly against a small fee. We expressively state that we take over no warranty whatsoever for data losses eventually occuring in case of the malfunction of the system in consequence of the installation of the CYBERSTORM PPC.

INSTALLATION OF THE CYBERSTORM PPC INTO THE AMIGA 4000

The CYBERSTORM PPC must be installed in the processor expansion slot of the AMIGA 4000. This slot is situated between the slot-board and the front drive. The installation of this board is not very difficult. However if you have no prior experience with installations of expansion boards, still have some questions after having read the instruction manual, or if you generally prefer, your retailer can carry out the installation, possibly against a small fee. Please take note that the installation must by all means be carried out under obligation of all usual precautions against damages caused by electrostatic charging.

INSTALLATION OF THE CYBERSTORM PPC:

1. Switch off your computer.
2. Disconnect all cables from the computer (power cable, monitor, mouse, keyboard, other interfaces).
3. On the Amiga 4000 there are only two screws that secure the casing cover, on the back of the casing on the richt and left.
4. Carefully remove the housing lid by flapping it up. Should you not succeed in doing so or should you need further information, please refer to you AMIGA-user manual.

5. In order to exchange the processor board, it is necessary to remove the hard disk in the rear drive as well. In order to remove the hard disk, just loosen the four mounting screws and lift up the hard disk with its attachment. The connecting cables are long enough so that you can put down the hard disk on the power supply unit without having to disconnect the cables.

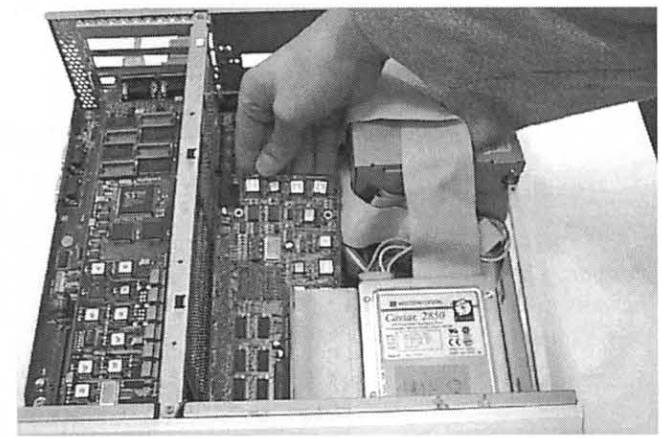


Figure 1.

Slight tilting to the side makes it possible to take the CPU-board out of the housing after the connectors have been loosened.

6. Afterwards, the processor board is taken out of the computer as shown in figure 1. If the board can hardly be moved, you should take care that the four spacers are also loose. Now the board can be taken out of the computer by slight tilting. If the spacers sit not on the main board but on the processor board, you should put these back in their foreseen drill holes on the main board, as shown in Figure 2. This is required to make the installation of the CYBERSTORM PPC system as easy as possible. For owners of AMIGA 4000/030, two additional spacers are supplied with the delivery.

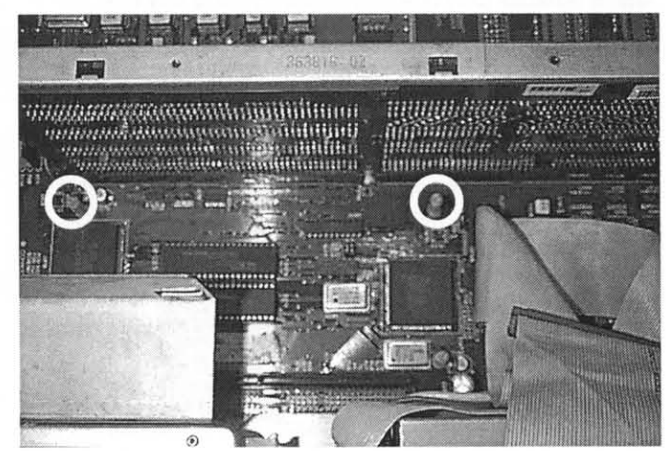


Figure 2.

The CYBERSTORM PPC has to be placed on these spacers.

7. Before the carrier board is inserted, the two clock jumpers marked on the main board under the CPU-board with "***INT***" or "***I***" and "***EXT***" or "***E,***" (see Figure 3), have to be put in their proper position. For the operation of the CYBERSTORM PPC they have to be placed in position "***EXT***" or "***E,***". Depending on whether you are using an AMIGA 4000/030 or AMIGA 4000/040, these jumpers by default are set to on position "***EXT***" or position "***INT***". Please take note that the operation of the CYBERSTORM PPC is not possible if the jumpers are set to position "***INT***", and the computer will not boot in such a wrong position.

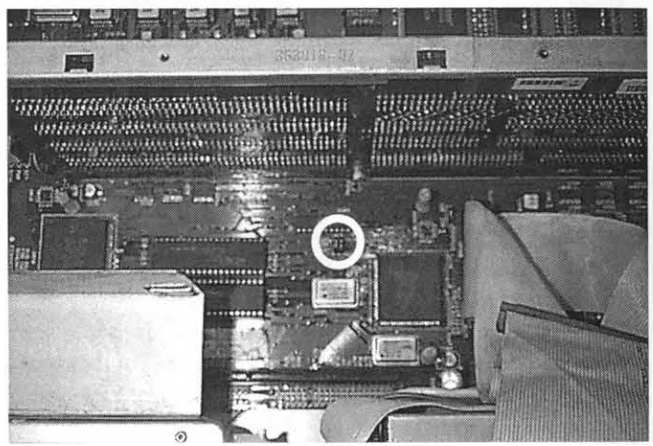


Figure 3.

Position of clock jumpers, which have to be set correctly.

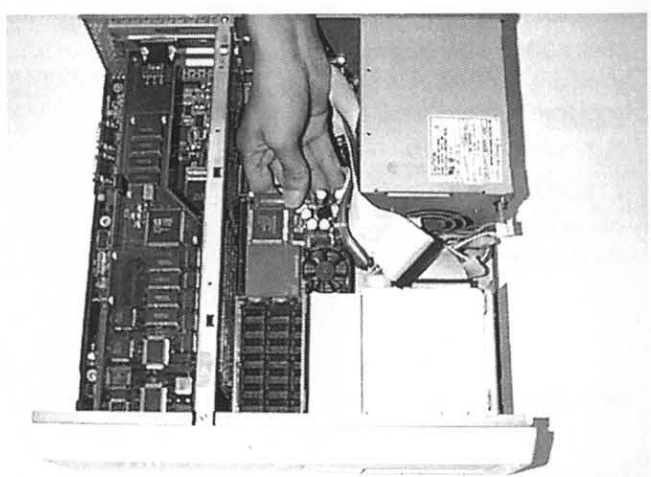


Figure 4.

Installation of the CYBERSTORM PPC. The circles mark the positions of the drill holes, into which the spacers must be engaged.

8. The carrier board is installed into the computer by means of placing it onto the spacers first, and then pushing them down (see Figure 4). Please make sure that the board is kept in place by the spacers and also sits properly in the processor plug.

9. Re-mount the hard disk, complete with its attachment, by reversing the sequence in which you have taken it out.
10. Finally you close the housing, fasten all screws, and re-connect all cables to the computer in their prior positions. Now the installation is complete.

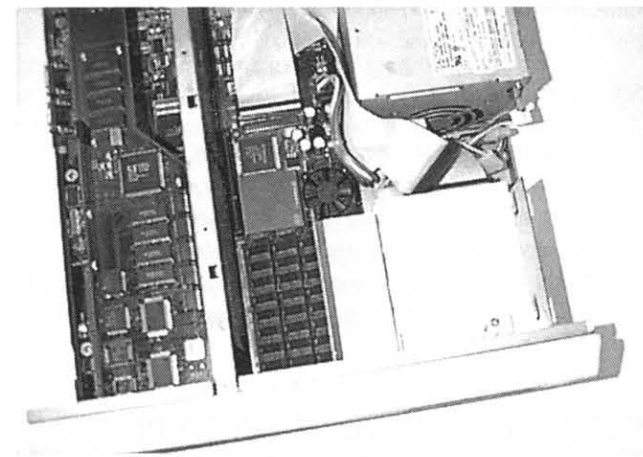


Figure 5.

The CYBERSTORM PPC is ready installed.

ADVICE

Only if your AMIGA is furnished with the Kickstart Version 3.x, the CYBERSTORM PPC is now immediately ready to use, and will place its performance at your disposal immediately after the computer has been switched on.

INSTALLATION OF THE CYBERSTORM PPC INTO AMIGA 4000T

For installation in an AMIGA 4000T, please read chapter „3.1 Internal Expansion Options" in your AMIGA user manual first. There, the installation of a processor expansion module is thoroughly explained. Please also refer to the chapter „Jumper on the main board of A4000T" in your AMIGA user manual, and make sure that the jumpers J100 and J104 are in position "***EXTERNAL*** **or** "***E***"**!**

ADVICE

In any case we strongly recommend to use the spacers supplied with the delivery, which grant a troublefree, straight position of the CYBERSTORM PPC within the AMIGA 4000T. (some AMIGA 4000T coming from the production of Amiga Technologies were erroneously delivered with spacers that were too long).

INSTALLATION OF THE CYBERSTORM PPC INTO AMIGA 3000(T)

For installation in an AMIGA 3000 resp. AMIGA 3000T please refer to your AMIGA user manual. For the operation of the CYBERSTORM PPC in the AMIGA 3000(T) three jumpers on the A3000 mainboard must be set as follows: Jumper **BRDCLK to position EXT**, jumper **CPUCLK to position INT**, and jumper **QUADCLK to position EXT**. The positionens of the jumpers are described in the AMIGA 3000(T) user manual.

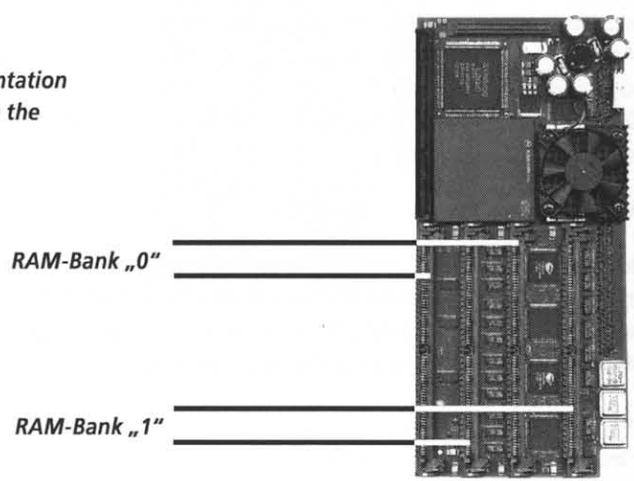
ATTENTION

The CYBERSTORM PPC can only be used in the Amiga 3000 Desktop after a modification of the A3000 mainboard, as the CPU slot of the A3000 is missing an important signal (INT2) which is necessary for the operation of the PowerPC and the SCSI controller. For this modification, one wire must be soldered to connect two pins on the bottom of the A3000 mainboard. This modification shall only be carried out by authorized service centers or experienced technicians. A description of the modification is available from phase 5 digital products on request.

INSTALLATION OF THE CYBERSTORM PPC IN SYSTEMS WITH AN A3000/A4000 COMPATIBLE PROCESSOR SLOT

For installation of the CYBERSTORM PPC in a system with an A3000/A4000 compatible processor slot, please refer to the installation instructions and jumper setting recommendations provided by the manufacturer of the system. In any case, the CYBERSTORM PPC must be operated with the busclock setting set to "***external***".

Figure 6.
The postion and orientation of the RAM-Banks on the CYBERSTORM PPC.



CHAPTER 3

MEMORY EXPANSION

The CYBERSTORM PPC Accelerator features a 64-bit wide memory expansion option, realized by 4 standard SIMM sockets where memory modules can be installed.It is necessary for the operation of the CYBERSTROM PPC to install at least 8 MByte of memory (two modules each with a size of 4 MB) ; some of todays complex software applications, however, may require a larger amount of memory to operate.
As the memory expansion on the CYBERSTORM PPC is 64-bit wide, it is necessary to expand the memory with pairs of equal PS/2 type memory modules, which are each 32-bit wide. The CYBERSTORM PPC provides two logical memory banks, bank 0 and bank 1 (please refer to picture 6 for the location of the memory banks). Bank 0 must always be populated with SIMMs first. When installing pairs of equal SIMMs in each of the memory banks, always make sure that you use absolutely identical types of SIMMs (same memory speed, same type, preferrably same vendor) in order to avoid problems with the memory access which may result in a complete system failure.
The size of the memory installed on the CYBERSTORM PPC is automatically recognized, and the memory will be automatically configured and added to the system memory, provided that the memory is correctly installed following these instructions. The CYBERSTORM PPC will accept pairs of industry standard 32-bit SIMMs (also known as PS/2 type SIMMs) with memory sizes of 4 MByte, 8 MByte, 16 MByte and 32 MByte per SIMMs. It is allowed to use pairs of different sized SIMMs in each of the banks; however, it is necessary that ALL SIMMs installed on the CYBERSTORM PPC have the same speed.

EXAMPLE:

You can install two 8 MByte SIMMs in memory bank 0, and two 16 MByte SIMMs in memory bank 1, and will have a total installed memory of (2 x 8)+(2x 16) = 48 MByte. In any possible combination, you will always get one continguous block of memory with the total size of the SIMMs installed. It makes no difference in which memory bank the larger SIMMs are installed.

ATTENTION!:

If the memory on the CYBERSTORM PPC is not installed in pairs and following the instructions above, this may result in a wrong recognition of the installed memory and related system malfunction.

The SIMMs that can be used may etiher be 32-bit types (without parity) or 36-bit types (with parity); if 36-bit types are installed, the parity bits of these SIMMs are ignored. The SIMMs installed on the CYBERSTORM PPC must be 70ns speed grade or faster; it is highly recommended to look for 60ns or faster types when new modules are bought.

Please take note that SIMM modules of the most different producers are on the market which do not keep the imprinted speed. In particular SIMM modules bearing the imprint e.g. Laser-Printer Memory (or similar phantasy labels) are unsuited as memories for computer systems. phase 5 digital products principally recommends not to use such SIMM-modules.

INSERTION OF SIMM-MODULES

Put the CYBERSTORM PPC on a plane, stable underground. Be aware that sensitive surfaces could be scratched by the pins on the bottom when mounting the memory module, therefore we recommend to use e.g. a magazine as support. Also do not press the board onto the underground as there are SMD componets mounted on the bottom side. Now align the CYBERSTORM PPC Turbo Board so that the 68060 CPU points towards the ***left***. The memory SIMMS have a recess opening on one side of the contact strip, so that they can not be mounted upside down. This recess opening must be at the ***left*** side when mounting. Insert the SIMM at an angle of approx. 40° flush into the socket, thus the module can be inserted without problems. Then softly press down both upper corners of the SIMM with your thumbs, until it audibly locks into place. Take care that the metal hooks left and right besides the fixation holes both lock in over the board of the SIMMS. Keep in mind for all handling steps that the SIMMs must not be subject to strong mechanical stress.

SOFTWARE INSTALLATION

The „PowerUP® System Disk" provided with the CYBERSTORM PPC includes the necessary libraries and drivers to run the PowerPC processor and the 68k companion processor, as well as some tools which are helpful for the operation of the boards.

ADVICE

The installation of the software must be done BEFORE the CYBERSTORM PPC is installed in your computer.

The installation of the software will be done using an installation script. Insert the „PowerUP® System Disk" provided with your CYBERSTORM PPC into your floppy disk drive, and open the directory on the workbench via a double-click on the disk icon. Before you start to install the CYBERSTORM PPC software, open the "ReadMe" file on this disk via a double-click on the file icon. This text file contains the latest and necessary information about the software and the installation of the software. The software will be installed by double-clicking on the INSTALL icon. The different software programs which are being installed have own documentation files, if necessary, in form of additional ***ReadMe*** files on the disk.

CHAPTER 4

THE ULTRA WIDE SCSI DMA CONTROLLER

The integrated on-board Ultra Wide SCSI controller with a maximum transfer rate of 40 MByte/sec on the SCSI bus offers enormous performance reserves with todays fast storage media, especially the fast harddrives which are available for desktop systems. Applications which are depending on fast access to largest amounts of data can therefore be accelerated significantly. The SCSI controller which is based on the Symbios 53C770 SCSI Sript Processor operates as a DMA busmaster device. A standard 68pin Wide SCSI connector is available for the connection of SCSI devices, to the speed level of Fast SCSI.

The ULTRA WIDE SCSI Controller of the CYBERSTORM PPC will reach full performance best when only operated with ULTRA WIDE SCSI units. The following chapter will also describe how to connect Fast SCSI units, but it is recommended to operate Fast SCSI units on a Fast SCIS Controller if already present in your system. Connection of Fast SCSI units may lower the data transfer rate on the whole SCSI bus.

CONNECTION OF ALREADY RDB FORMATTED SCSI-DRIVES

If you connect a hard disk (or resp. another SCSI unit) to the CYBERSTORM PPC SCSI, which was formerly operated on a SCSI controller in the AMIGA and formatted with the RDB (Rigid Disk Block) according to AMIGA standard, this unit is immediately ready to use.
After the computer has been started, the partitions existing on this disk must be automatically recognized and, resp. even booted. If this is not so, contact your retailer in any case, before undertaking further measures.

ATTENTION!

If you want to connect hard disks which you already use on another controller, and on which data is stored, we urgently recommend to make a safety backup of the hard disk before removal from the old system. Each new connection of an already operated hard disk bears the risk – if ever so small – of a data loss because of installation mistakes, or possible malfunctions. If the backup on floppy disk seems too slow, ask your retailer if he could take over the backup and re-installation for you (e.g. on a streamer), or if you could borrow a streamer, possibly against a low fee. We expressively state that we take over no warranty whatsoever for data losses on hard disks or SCSI units which have been previously used before being connected to the CYBERSTORM PPC SCSI.

CONNECTING AND OPERATING INTERNAL AND EXTERNAL SCSI DEVICES

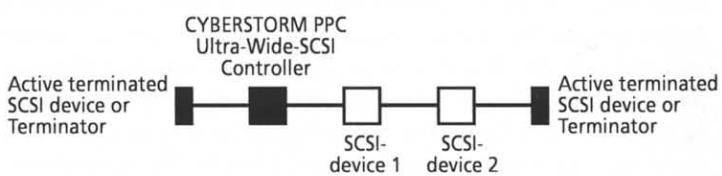
FThe CYBERSTORM PPC has an internal non-terminated 68pin female high density SCSI connector following the ULTRA WIDE SCSI standard. All kinds of internal and external SCSI devices can be connected through this SCSI connector. It is important to take care that the SCSI bus is correctly terminated, as it is explained in the paragraphs and examples below, and that the SCSI ID of the devices is correctly set, as it is also explained in the following paragraphs. The SCSI cables and adators which are needed to connect different types of SCSI devices can be obtained at your local dealer; we recommend to ask the dealer where you have bought your CYBERSTORM PPC for the cabels and adaptors you may need.

Internal ULTRA WIDE SCSI devices will be connected by use of a 68pin flat ribbon cable. If you want to connect FAST SCSI devices to the CYBERSTORM PPC, you will need an adaptor to bridge from the ULTRA WIDE SCSI bus to the FAST SCSI bus. This adaptor must have an active termination of the eight upper data lines of the ULTRA WIDE SCSI bus; please make absolutely sure that you choose the right type of adaptor.

For the connection of external SCSI devices you will need an adaptor for connecting these devices, which are available in several different forms. When you choose the adaptor that fits your needs make sure that you choose the right external connector type (depending on whether you want to connect ULTRA WIDE SCSI devices or FAST SCSI devices), and that the adaptor - in case it is the bridge from ULTRA WIDE SCSI to FAST SCSI - includes an active termination of the eight upper data lines of the ULTRA WIDE SCSI bus.

During the operation of external SCSI devices it should be taken care that the external devices are always switched on before the computer is switched on, and that they are always switched off after the computer has been switched off.

Figure 7.



ADVICE

For the connection of external SCSI units only top quality screened cables are admitted, which comply with the valid standards (CE, FCC, or similar). For purchasing such cables, which offer the corresponding attenuation properties, please turn to your retailer. Please also be aware that external SCSI units have to fulfill the valid standard norms!

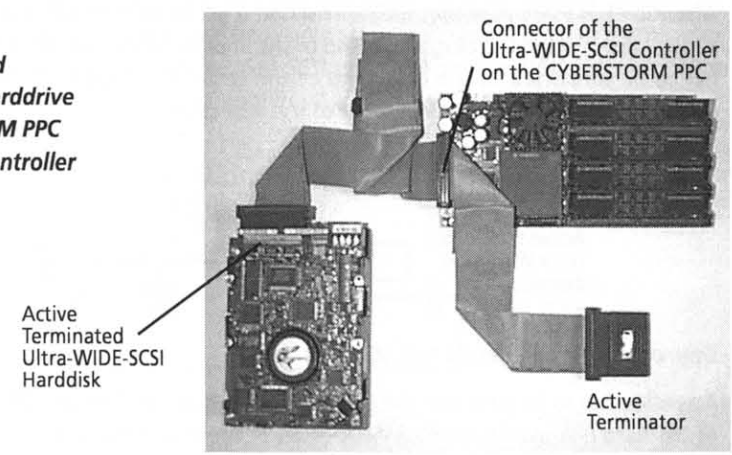
SCSI-BUS TERMINATION

To provide error-free operation of the SCSI bus system, it is absolutely necessary that the SCSI bus is electrically terminated in a correct way. You can imagine the SCSI bus being a single cable which must be ***actively terminated*** at each ends of the cable. The indicivdual SCSI devices are then beeing connected to the cable directly between these terminated ends, and the SCSI controller itself also acts as a SCSI device (please also see Figure 7).
In the real-world application this means that the first and the last SCSI device in the SCSI chain must be ***actively terminated***, and the connection to the controller must be made some–where between the first and the last device. There is also one special case, which is the possible translation from a WIDE SCSI bus (16 bit date) to a Fast SCSI bus (8 bit data). At this point, all data lines which are only implemented on the WIDE SCSI bus (the upper 8 data lines) must be terminated ***actively***, while the lower 8 data lines must then be terminated at the end of the Fast SCSI bus. Therefore it is necessary to use WIDE to Fast SCSI adaptors with the described integrated termination when Fast SCSI devices shall be connected to the CYBERSTORM PPC SCSI controller.

The CYBERSTORM PPC SCSI controller doesn't have an own active termination, as there are too many possible custom configurations. The termination will be done either with SCSI devices at the end of the chain, or – in case only one SCSI device is connected to the SCSI bus – with an additional ***active terminator*** (see Figure 8).

Figure 8.

A correct connected Ultra-Wide-SCSI Harddrive on the CYBERSTORM PPC Ultra-Wide-SCSI Controller



Older SCSI devices such as hard disks, removable drives, or streamers mostly have passive terminators installed. These terminators are usually located nearby the SCSI connector of the device. These passive terminators can not be used on the SCSI bus of the CYBERSTORM PPC SCSI controller, and must always be removed as the SCSI bus must be ***actively terminated***. If these passive termination resistors (usually resistor arrays) are not socketed, which is sometimes the case with devices where the termination resistors are SMD soldered, they can usually be disabled by a jumper or a switch on the SCSI devices. In any case, please refer to the

manual or technical documentation of the device to disable the passive termination, or ask your local dealer or service center for advice if you are unsure about the SCSI termination settings on your SCSI devices.

Please also make sure that an ***active termination*** is installed when you are using external SCSI devices, e.g. by use of an external ***active*** termination plug.

ATTENTION!

It is absolutely necessary that the SCSI bus is correctly actively terminated to provide safe and error-free operation. A wrong terrmination or the use of pasive terminators may result in data transmission errors or wrong recognition of SCSI devices connected to the SCSI bus, or in the worst case cause data losses on storage devices connected to the SCSI bus. Please always make sure that the termination is installed correctly following the instructions in this manual, and always avoid using any passive terminators in the SCSI chain connected to the CYBERSTORM PPC SCSI controller.

SCSI TERMINATION (EXAMPLES)

Operation with an internal WIDE SCSI unit

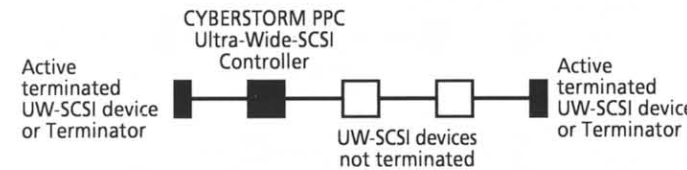
Attention has to be paid that the termination is active on the hard disk. For the connection of the hard disk use the plug at the end of the internal SCSI-cable. An active terminator pack has to be connected to the other end of the cable. The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable.

Operation with an internal Fast SCSI unit

Attention has to be paid that the termination is active on the hard disk. For the connection of the hard disk use an adaptor WIDE->Fast at the end of the internal SCSI-cable. An active terminator has to be connected to the other end of the cable. The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable.

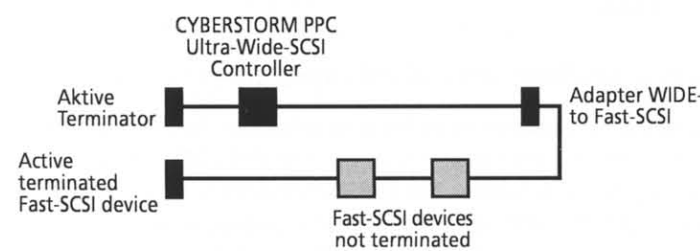
Operation with multiple internal WIDE SCSI units

The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable. At every physical end of the WIDE SCSI cable a WIDE SCSI unit with activated terminators is connected. Additional WIDE SCSI units with termination deactivated can be connected to free plugs of the WIDE SCSI cable.



Operation with multiple internal Fast SCSI units

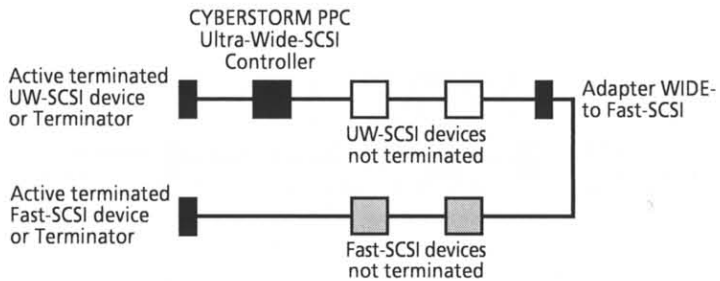
The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable. One physical end of the WIDE SCSI cable is connected to an active terminator pack. The other end of the WIDE SCSI cable is connected to a Fast SCSI cable using an adaptor WIDE->Fast. One of the Fast SCSI units needs to be connected with activated termination to the other physical end of the Fast SCSI cable. Additional Fast SCSI units with termination deactivated can be connected to free plugs of the Fast SCSI cable.



Operation with internal Fast SCSI and WIDE SCSI units

The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable. The WIDE SCSI unit has to be connected at the plug at the end of the internal WIDE SCSI cable with termination activated. Additional WIDE SCSI units with termination deactivated can be connected to free plugs of the WIDE SCSI cable. The other end of the WIDE SCSI cable is connected to a Fast SCSI cable using an adaptor WIDE->Fast. The adaptor used needs to ter-

minate the upper half of the WIDE SCSI bus only. One of the Fast SCSI units needs to be connected with activated termination to the other physical end of the Fast SCSI cable. Additional Fast SCSI units with termination deactivated can be connected to free plugs of the Fast SCSI cable.

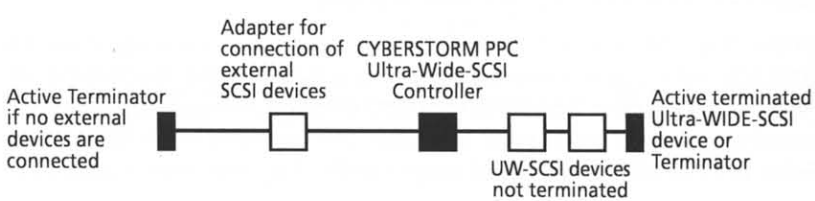


Operation with only external SCSI units

The external connector is connected to the physical end of the WIDE SCSI cable. The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable. An active terminator pack has to be connected to the other end of the cable.

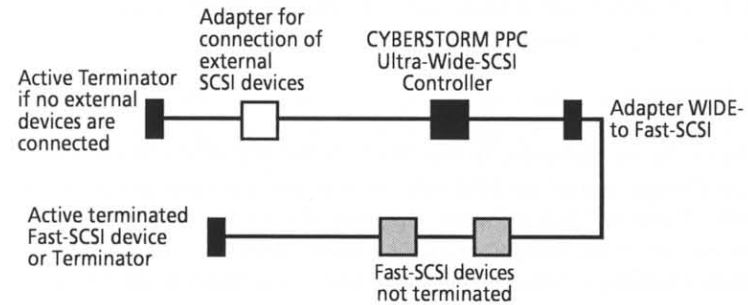
Operation with external WIDE SCSI units and internal WIDE SCSI units

The external connector is connected to the physical end of the WIDE SCSI cable. As long as there are no external SCSI units attached, an external WIDE SCSI terminator plug has to be connected to the external connector. The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable. The WIDE SCSI unit has to be connected at the plug at the other end of the internal WIDE SCSI cable with termination activated. Additional WIDE SCSI units with termination deactivated can be connected to free plugs of the WIDE SCSI cable.



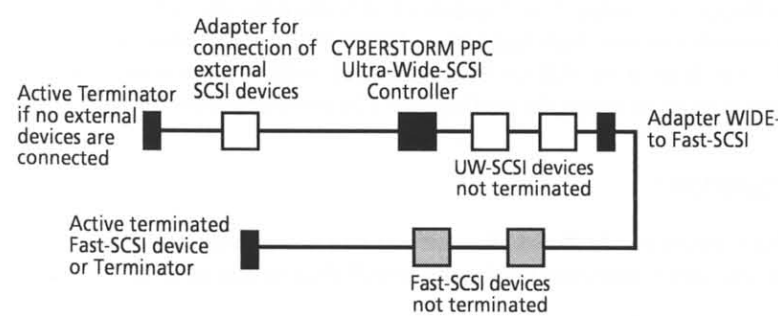
Operation with external WIDE SCSI units and internal Fast SCSI units

The external connector is connected to the physical end of the WIDE SCSI cable. As long as there are no external SCSI units attached, an external WIDE SCSI terminator plug has to be connected to the external connector. The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable. The other end of the WIDE SCSI cable is connected to a Fast SCSI cable using an adaptor WIDE->Fast. The adaptor used needs to terminate the upper half of the WIDE SCSI bus only. One of the Fast SCSI units needs to be connected with activated termination to the other physical end of the Fast SCSI cable. Additional Fast SCSI units with termination deactivated can be connected to free plugs of the Fast SCSI cable.



Operation with external WIDE SCSI units and internal Fast SCSI and WIDE SCSI units

The external connector is connected to the physical end of the WIDE SCSI cable. As long as there are no external SCSI units attached, an external WIDE SCSI terminator plug has to be connected to the external connector. The CYBERSTORM PPC SCSI has to be connected to one of the middle plugs of the SCSI cable. The other end of the WIDE SCSI cable is connected to a Fast SCSI cable using an adaptor WIDE->Fast. The adaptor used needs to terminate the upper half of the WIDE SCSI bus only. WIDE SCSI units can be connected with termination deactivated to free plugs on the WIDE SCSI cable. One of the Fast SCSI units needs to be connected with activated termination to the other physical end of the Fast SCSI cable. Additional Fast SCSI units with termination deactivated can be connected to free plugs of the Fast SCSI cable.



ADJUSTMENT OF THE SCSI-ID OF THE CONNECTED UNITS

For the distinction of different units, which are connected to the SCSI bus, SCSI units have a so-called SCSI ID which can represent a value from 0-7 for Fast SCSI units and 0-15 for WIDE SCSI units. The integrated SCSI controller on the on the CYBERSTORM PPC Accelerator itself has the ID 7. This means that to one CYBERSTORM PPC SCSI up to 7 Fast SCSI units with IDs 0-6 or up to 15 WIDE SCSI units with IDs 0-6 and 8-15 can be connected.
If multiple SCSI units shall be connected to the CYBERSTORM PPC SCSI, the SCSI IDs of all these units have to be adjusted so that no unit has the same ID. The SCSI ID for external SCSI units is generally adjustable with a small switch by the user. Herefore please consult the documentation of the corresponding SCSI unit.

ATTENTION!

If two units are connected to the CYBERSTORM PPC SCSI with the same SCSI ID, this could damage one of the SCSI units. In any case, only one unit is recognized by the CYBERSTORM PPC SCSI software. Vice versa, if after the connection of e.g. a new hard disk this unit is not recognized by the CYBERSTORM PPC SCSI software, this may be a hint that possibly a SCSI ID is adjusted at this unit, which is already occupied by another unit. The same is of course also valid, if a new disk appears, but suddenly a earlier connected unit can no longer be accesed. To avoid operation of two SCSI units with the same ID in any case, you should check before the connection of a new SCSI unit with the CYBERSTORM PPC SCSI software (e.g. the Program Unit Control) which SCSI IDs are already assigned/occupied.

ADVICE

The sequence in which the SCSI IDs are assigned can principally be freely chosen, i.e. neither must the SCSI IDs be assigned continuously, nor does the selectable SCSI ID depend on the position of the unit in e.g. a series of connected disks. Nevertheless it is recommended to assign the ID 0 to the first connected unit, and to assign later connected units with the following IDs in ascending sequence, as this can considerably shorten the system startup-time. Exception to this rule is the connection of WIDE SCSI units for system that have both Fast SCSI and WIDE SCSI units attached to the CYBERSTORM PPC SCSI. To keep the SCSI IDs free for Fast SCSI units, which can only be set to 0-6, it is recommended to assign IDs starting from 8 in ascending order for WIDE SCSI units.

ATTENTION!

With some hard disks it could happen that they do not function properly on the SCSI ID 0. In this special case, please change the SCSI ID on to any other ID.

THE SCSI SOFTWARE

The „PowerUP® SCSI Disk" included in the delivery contains comprehensive software for the installation of the hard disk, as well as for individual adjustments. The installation program on the disk enables the user to install the required software. This program is structured into the sectors installation and configuration of the supplied CD ROM Filesystems.
In order to install the software, insert the „PowerUP® SCSI Disk" and follow the instructions of the installation program on the disk.
Software documentation is stored on the disk and is automatically installed during setup. After the installation you will find the documentation as a ***README*** file.

ADVICE

For programs that require the device name, you have to enter `cybppc.device`. Note that for some applications you may need to include the device name in quotation marks.

CHAPTER 5

ERROR TRACKING

Error: The computer can't be started

Check if the mains cable has stable contact. If this is so, kindly contact your retailer.

Error: Autoconfig-error

If after the starting of the computer resp. after a reset a red screen appeards with the title "Expansion Board Diagnostics", then please refer to your retailer.

Error: A SCSI unit is not recognized

Check if the unit is conected to the internal power supply.

For external units: Check if the mains cable of the external unit is connected correctly, and if the unit is switched on.

Check the SCSI ID of the connected units.

Check the connection of the SCSI cable on the CYBERSTORM PPC SCSI controller and on the SCSI unit.

For external units check the correct position of the external SCSI cables.

Check the correct SCSI-bus-termination.

If necessary exchange the cable or connect (for internal units) the SCSI unit to another plug of the cable, to find out eventual errors of the cable.

Error: The partitions of a disk which was formatted earlier are not recognized

First you should check with the program Unit Control which is delivered together with the CYBERSTORM PPC if the respective hard disk is physically recognized. If this is not the case, please carry out the instructions of the previous error description. If the disk is recognized, check if the formerly used controller was RDB compatible, and also oblige the step-by-step instruction for the configuration of a hard disk. If with the instructions given there you still can not configure the disk, please refer to your retailer before you undertake further measures.

Error: During operation of a hard disk, transmission errors occur

Check the correct SCSI bus termination resp. termination of the individual conneted units.

Check the SCSI IDs of the connected units.

Check the correct termination of the SCSI cable. If necesary exchange the cable, to find out possible cable malfunctions.

Another cause for transmission errors could be if a SCSI unit, expecially during operation with long cables, is operated in the synchron mode with high transmission rates. In this test try to decrease the transmission rate by means of UnitControl.

Problem: A SCSI unit works slower than expected.

Check the correct adjustments of the synchronous transmission and the mask and maxtransfer values of the concerned partitions. You can use the program CheckMask for this purpose.

Check for partitions operated under AMIGA DOS if those are operated with the FastFileSystem (FFS). The adjustment FastFileSystem International Mode (FFS Int) can cause performance losses, also the AMIGA DOS formatting with directory cache often leads to a considerable decrease of the transmission rate.

If necessary check if the hard disk is fully utilized, and the files are distributed over many tracks. in such a case it can be sensible to optimize the hard disk, special programs for this purpose, so-called disk optimizer, are available. Please pay attention to the operating instructions when using such programs.

GENERAL REMARKS TO THE ERROR TRACKING

Another reason for errors which often causes unexplicable malfunctions of the system, is the usage of non system conform software, which for example does not work correctly with the Workbench 3.1 of the AMIGA. This could also be seemingly unimportant, little utility programs, which are e.g. called in the startup-sequence. If you have an individually configured system, it is important, that you eliminate this error source also, by executing a test with a standard configuration. Should you have problems, which do not correspond to the above listed, or which can not be eliminated with the proposed solutions, please refer to your retailer. Before calling him, make a very precise error description, which states your system configuration as well as resp. system error numbers in case of system breakdowns, and keep pen and paper ready.

CHAPTER 6

GUARANTEE, TECHNICAL SUPPORT AND SERVICE

GUARANTEE TERMS

On this CYBERSTORM PPC, phase 5 digital products gives a guarantee of 6 months for components and processing, starting with the date of first sales. (Date of the retailer's bill issued to the registered final customer). Within this guarantee period, we eliminate all defectives, at our free choice either by exchange or repair, which are due to material or production faults. Through the execution of guarantee services, the guarantee period is by no means affected. Considering the included software, this guarantee refers only to the data carrier (disk).

Excluded are guarantee services for damages or malfunctions, which have been caused by outside interference or improper usage, especially also unauthorized repair or inexperted installation. Modifications of the hardware, of what kind so ever, make the guarantee claim null and void.

Also excluded are guarantee services for malfunctions or function disturbances on the CYBERSTORM PPC, on other units connected on/to the AMIGA, or of the AMIGA itself, which occur after the assembly of the CYBERSTORM PPC or later modifications of the system (as e.g. the insertion of new expansions), as far as it can not be doubtlessly proven that a technical defect of the CYBERSTORM PPC is the cause of the malfunction or function disturbance. Modifications of the hardware and/or software of the AMIGA are expressively included, which are carried out in form of repairs, upgrades, or system-updates.

phase 5 digital products takes over no warranty what so ever that this product is suited for a certain application. Furthermore, we take over no liability for defects or damages on other units than the CYBERSTORM PPC, as well as expressively not for the loss of data, which are or seem to be in direct or indirect connection with the usage of the CYBERSTORM PPCI or the included software (DynamiCache/Cdrive), even if we have been informed about the possibility of such a connection in advance. For also delivered hard disks or other SCSI-units, exclusively the guarantee conditions of the respective producer are applicable.

In any case please return your registration card stating the date of purchase and serial number of the CYBERSTORM PPC, so that in case of problems or guarantee handling this can be processed without further demands or delays.

TECHNICAL SUPPORT AND SERVICE

Should you need technical information e.g. for the assembly, expansion or compatibility of your system configuration, please refer to your retailer, who will advise you with corresponding competence and offer you the suitable expansion products. The experienced AMIGA- resp. phase 5 digital products retailers have the necessary knowledge as well as additional service information, which will contribute to fast problem solution in case of simple technical problems or compatibility matters. Also for the assessment of possible guarantee cases (please also refer to the chapter „Handling of guarantee cases, returns") your retailer can assist you.
Furthermore, you will receive comprehensive support information through our World Wide Web-server in the Internet. You will reach our homepage under:

☞ ***http://www.phase5.de***

Here you can request all sorts of technical information to actual and future products, which are important for general information or technical support. These information are permanently actualized, and contain e.g. hints to tested and suitable hardware expansions or well-known error sources and compatibility restrictions as well as tips and infos for solving occuring problems. Of course actual software updates can be downloaded as well.
Actual updates of software drivers for our products, as far as available, can also be obtained through our FTP-server. You will reach our server under :

☞ ***ftp://ftp.phase5.de***

Should your retailer at times be unable to help you, or you have no access to our electronic support media, please refer in writing, by fax or by phone to our support department (see next chapter "Support, guarantee handling, returning").

SUPPORT, GUARANTEE HANDLING, RETURNS

For the handling of guarantee cases, in Germany please contact.

phase 5 digital products
In der Au 27
D-61440 Oberursel,
Germany
Support department:
Phone: ***+49 (0) 6171 62 84 55***
Fax: ***+49 (0) 6171 62 84 56***

In all other countries kindly directly contact our distributors or your retailer for the handling of guarantees. Please be aware that returns will only by accepted after advance agreement and authorization through our support. This assigns a RMA-number, which has to be marked good legibly on the return package. Please be aware that returns ***without*** RMA-number cannot be handled. Also, ***unfree*** returns are not accepted.

As far as in case of authorized return, no defect is to be noticed, a handling fee of DM 50,-- (as of August 1997) is charged, If a defect is noticed, which is not subject to the guarantee handling, then the handling fee and in case of repair also a repair fee which depends on the defect is charged.

For transport damages, which are due to unsuitable packaging of returns of units, no liability can be taken over. For any return of a CYBERSTORM PPC always use the original packaging, and additionally a stable outer wrap (e.g. postal package) and resp. filling material (e.g. biodegradable filling materials).