



**68060 BESCHLEUNIGER KARTE FÜR  
AMIGA 3000(T) UND AMIGA 4000(T)  
ANWENDERHANDBUCH**

**68060 ACCELERATOR BOARD FOR  
AMIGA 3000(T) AND AMIGA 4000(T)  
USERS MANUAL**



**MK II**

# **CYBERSTORM**

**68060 ACCELERATORBOARD  
FOR AMIGA 3000(T) AND AMIGA 4000(T)**

## **USER MANUAL**

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**PREFACE**

Many thanks for choosing our product. With the overwhelming performance of the fastest processor of the 68k-family, the Motorola 68060, the successor of the praxis-proven CYBERSTORM 060/50, which was twice chosen as product of the year in 1995 in the AMIGA - magazine, brings along a performance level for the AMIGA 3000(T)/4000 which was formerly unthinkable in the sum of it's outstanding features and at this price. With more than 80 MIPS performance and the high performance of the integrated floating point processor unit (FPU), the AMIGA 3000(T)/AMIGA 4000(T) becomes a powerful workstation, which is more than suited for today's most demanding applications such as 3D-calculations and ray-tracing, image processing, animation or video processing.

Some of the most important features of the CYBERSTORM MKII:

- ▶ *High-End Turbo board for the AMIGA 3000(T)/AMIGA 4000(T) with 50 MH-68060 processor with FPU and MMU for maximum performance.*
- ▶ *Four 72-channel standard-SIMM-sockets for the memory expansion up to 128 Mbytes main memory (merged assembly is also possible in fully automatic configuration without jumper)*
- ▶ *An extremely fast memory layout grants highest data throughput in the FAST RAM*
- ▶ *When the optionally available CYBERSCSI MKII-module is installed, the processor on the CYBERSTORM MKII is not loaded due to DMA-transmission (Direct Memory Access). This makes the CYBERSTORM MKII ideally suited for multimedia applications*
- ▶ *Safe function of existing programs through powerful, praxis-proven emulation software*
- ▶ *Fitting easily and exactly into the processor expansion slot of the AMIGA 3000(T)/AMIGA 4000(T)*
- ▶ *Top-quality product in the latest state-of-the-art SMD-technology*
- ▶ *Available as an option: Fast SCSI-II DMA Controller (CYBERSTORM MKII-module) with transmission rates of up to 7 Mbytes/sec. asynchronous and up to 10 Mbytes/sec. synchronous on the SCSI-bus*

At this point we kindly ask you to fill in the registration card which is attached to this product, and return it to us. At the one hand, we can inform you about possible future expansions for the CYBERSTORM MKII as well as other developments around the AMIGA, at the other hand you shall help us with your opinion to further develop and bring on the market in the future products for the Amiga desired by you as user.

**CHAPTER 1  
THE CYBERSTORM MKII****SCOPE OF DELIVERY**

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

- ▶ *One board (CYBERSTORM MKII)*
- ▶ *One installation disk*
- ▶ *This manual*

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

**IMPORTANT! BEFORE BEGINNING WITH THE ASSEMBLY**

Before you begin with the assembly of the CYBERSTORM MKII, you should first consider the following items:

1. To function correctly, the CYBERSTORM MKII needs special 68060 - specific software. This software has to be installed before the assembly of the CYBERSTORM MKII. See also chapter „Software installation“.
2. If you want to build in the CYBERSTORM MKII into an AMIGA 3000/3000(T), please first read the Appendix A "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. If you want to install the CYBERSTORM MKII into an AMIGA 3000/3000(T), also please check first which Kickstart-ROM is installed in your AMIGA 3000/3000(T). In order to grant the full functionality of the CYBERSTORM MKII we recommend the usage of Kickstart-ROM Version 3.1.
4. If you want to expand your CYBERSTORM MKII with storage modules (SIMMs), please read the corresponding chapter first, as it is easier to install the SIMMs before installing the CYBERSTORM MKII in the computer.

## INSTALLATION OF THE CYBERSTORM MKII INTO THE AMIGA 4000

The CYBERSTORM MKII is installed in the processor expansion slot of the AMIGA 4000. This 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.

### ATTENTION!

*Before starting with the installation of the CYBERSTORM MKII you should by all means read this manual, otherwise the board or the computer could suffer damage!*

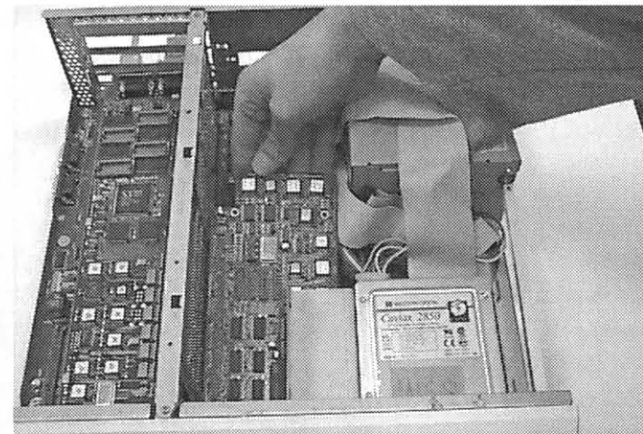
*Furthermore, the software has to be installed before beginning to install the CYBERSTORM MKII! Please read chapter "Software installation" first.*

If hard disks on which there are unsaved data are connected to the system into which the CYBERSTORM MKII is going to be installed, we urgently recommend to make a safety backup of the hard disk(s) **BEFORE** installing it/them into the system. 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, in consequence of such a damage or malfunction, data losses could occur due to malfunctions during the following installation. 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 occurring in case of the malfunction of the system in consequence of the installation of the CYBERSTORM MKII.

### Installation of the CYBERSTORM MKII:

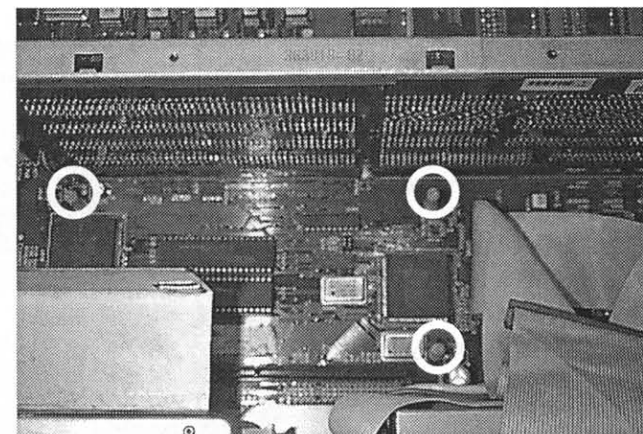
1. Switch off your computer.
2. Disconnect all cables from the computer (monitor, mouse, keyboard, other interfaces).
3. Lösen Sie die zwei Schrauben die den Gehäusedeckel halten. Diese befinden sich auf der Rückseite links und rechts oben.
4. Carefully remove the housing lid by flapping it up. Should 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, then you should put these back in their foreseen

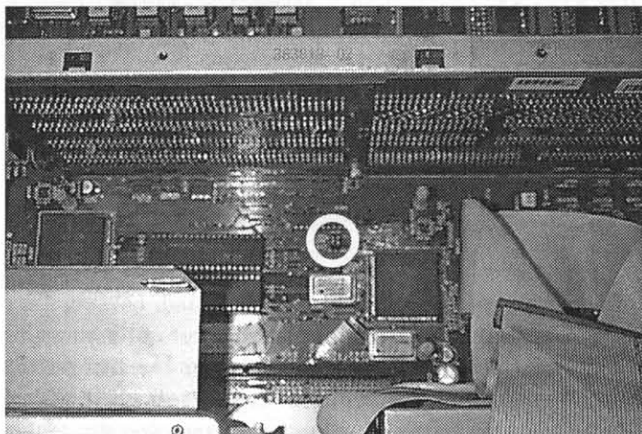


**Figure 2.**  
*The CYBERSTORM MKII has to be placed on these spacers.*

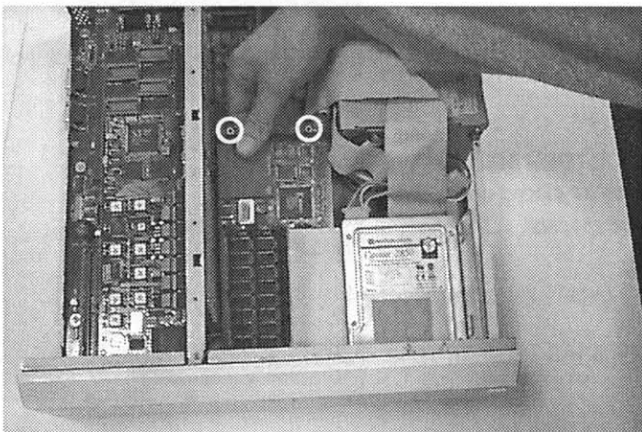
drill holes on the main board, as shown in Figure 2. This is required to make the installation of the CYBERSTORM MKII system as easy as possible. For owners of AMIGA 4000/030, additional spacers are supplied with the delivery.

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

**Figure 3.**  
Position of clock jumpers, which have to be set correctly in any case.



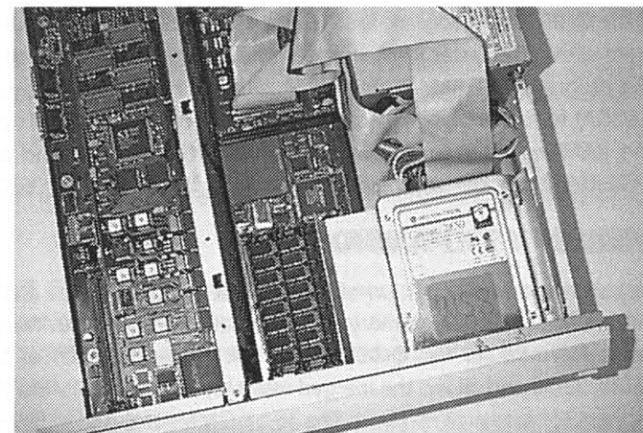
**Figure 4.**  
Installation of the CYBERSTORM MKII. The circles mark the positions of the drill holes, into which the spacers must be engaged.



- 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 take note that the board is kept in place by the spacers and also sits properly in the processor plug.

- Re-mount the hard disk, complete with its attachment, by reversing the sequence in which you have taken it out.
- 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 MKII is ready installed.



**INSTALLATION OF THE CYBERSTORM MKII 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 **INTERNAL!**

**Note:** in any case we strongly recommend to use the spacers supplied with the delivery, which grant a troublefree, straight position of the CYBERSTORM MKII 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 MKII INTO AMIGA 3000/3000T**

For installation in an AMIGA 3000 resp. AMIGA 3000T please refer to your AMIGA user manual and take note of Appendix A to this manual „Jumper configurations in AMIGA 3000 and AMIGA 3000T“

**OPERATION OF THE CYBERSTORM MKII**

If your AMIGA is furnished with the Kickstart Version 3.x, the CYBERSTORM MKII is now immediately ready to use, and will place its performance at your disposal immediately after the computer has been switched on. If your computer is furnished with a different Kickstart Version (e.g. Version 2.04), please refer to the Appendix B „Working under Kickstart 2.04“ first.

English

English

## CYBERMAP

On the disk delivered together with the CYBERSTORM MKII you shall find a program called "CYBERMAP". If memory is installed on the CYBERSTORM MKII, you can load Kickstart into the faster RAM with this program, in order to accelerate the execution of operating system functions.

If the CYBERMAP-program has been started, Kickstart is automatically re-copied and executed from within the faster RAM. In order to re-place Kickstart into the ROM and thus to deactivate the program CYBERMAP, press down the key combination required for resets (CTRL-AMIGA-AMIGA) for more than 10 seconds. The (activated) CYBERMAP function occupies 512 Kbytes of the RAM installed on the CYBERSTORM MKII. You can find a detailed description of the CYBERMAP program on the delivered disk in the drawer "CYBERMAP".

## MEMORY EXPANSION

Adjustment and recognition of the RAM as installed on the CYBERSTORM MKII is done fully automatically. For the memory assembly, you need 32-bit SIMMs, generally available under the name PS2-module. The CYBERSTORM MKII accepts SIMMs of the memory sizes 4MB, 8MB, 16MB, 32MB and allows the merged assembly with these SIMMs. The organisation of the SIMMs may be 32 bit as well as 36 bit. The 36-bit SIMMs are used in IBM-compatible PCs, which utilize the additional 4 bits as parity bits. CYBERSTORM MKII ignores these additional bits. For the operation in a CYBERSTORM MKII, SIMMs with a speed of 70 ns or faster are required.

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.

## ASSEMBLY OF SIMM-MODULES

Put the CYBERSTORM MKII on a plane, hard 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. Now align the CYBERSTORM MKII 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. Take care for all handling steps that the SIMMs must not be subject to strong mechanical stress.

**Note:** Generally it does not matter in which sequence resp. in which of the four SIMM-sockets you insert your SIMM(s).

## SOFTWARE INSTALLATION

The included software contains the necessary libraries for the operation of the 68060 CPU, the command CPU060, an equivalent to the CPU command of the operating system, as well as some tools for the operation of the 68060 CPU.

Through the installation, the 68040.library, if existing, is renamed and the libraries 68040.library and 68060.library are copied into the directory LIBS:. Furthermore, the CPU060 command is copied to C: and a drawer with the designation SOFT060 is generated in the system partition which contains the tools for the operation of the 68060 CPU.

## ATTENTION!

*The installation of the software must in any case take place before the assembly of the CYBERSTORM MKII !*

Should the operation of a 68000, 68020, 68030 or 68040 CPU be necessary, then you need make no modifications to the installed software. The present version of the 68040.library which is delivered together with the CYBERSTORM MKII automatically recognizes the inserted processor and loads the required library.

The software installation is made through an installation script. Insert the delivered disk and open it through double mouseclick. Before the final installation, you should doubleclick on the "ReadMe"-file to open it. In this text, the actual information on the software is contained. The software is then installed through doubleclick on the INSTALL icon. The program in the SOFT060 directory have their own documentation on the disk, the command CPU060 has, in addition to the arguments of the CPU command, the following arguments:

(NO)SUPERSCALAR      (de)activates the superscalar mode of the processor  
(NO)BRANCHCACHE      (de)activates the branchcache

## CHAPTER 2 GUARANTEE; TECHNICAL SUPPORT AND SERVICE

### GUARANTEE TERMS

On this CYBERSTORM MKII, 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 (DynamiCache/Cdrive), 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. 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 MKII, on other units connected on/to the AMIGA, or of the AMIGA itself, which occur after the assembly of the CYBERSTORM MKII 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 MKII is the cause of the malfunction or function disturbance. Modifications of the hardware and/or software of the AMIGA are expressly included, which are carried out through the company AMIGA Technologies 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 MKII, as well as expressly not for the loss of data, which are or seem to be in direct or indirect connection with the usage of the CYBERSTORM MKIII 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 MKII, 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, starting with the end of February, 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 occurring 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: +49 (0) 6171 5837 88*

*Telefax: +49 (0) 6171 5837 89*

In all other countries kindly directly contact our distributors or your retailer for the handling of guarantees. Please be aware that returns will only be 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 February 1996) 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 MKII always use the original packaging, and additionally a stable outer wrap (e.g. postal package) and resp. filling material (e.g. biodegradable filling materials).

## **APPENDIX A: JUMPER CONFIGURATIONS IN THE AMIGA 3000 AND AMIGA 3000T**

The correct jumper position for the operation of the CYBERSTORM MKII for models AMIGA 3000 and AMIGA 3000T is according to the basic positions as given in the corresponding computer user manuals. It is only necessary to check the jumper position in case a different Turbo board had been installed before the installation of the CYBERSTORM MKII.

## **APPENDIX B: UPGRADE TO 66MHZ VERSIONS OF THE CPU**

The CYBERSTORM MK II is designed to work with the 68060/66 MHz CPU. The upgrade consists of a 66MHz oscillator, the 68060/66 MHz CPU and an upgrade of the CYBERSTORM MK II firmware. To upgrade, the firmware has to be installed to the CYBERSTORM MK II according to the instructions supplied with the firmware upgrade kit. After that, the oscillator and the CPU can be changed to the new ones supplied with the upgrade. Please keep in mind, that extraction of the CPU in the PGA package has to be done using appropriate tools. Due to this, the upgrade should only be done by authorized dealers or distributors. Damages caused by screwdriver scratches or static electricity are expensive and not necessary. Please rely on the manual supplied with the upgrade kit.

By today (June '96) the availability of the upgrade kit can not be guaranteed, since Motorola has not committed to release the 68060/66MHz version.

[www.a1k.org](http://www.a1k.org)