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# **miroHIGHRISC**

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## **User's Manual**

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## **miroHIGHRISC**

User's Manual

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# Contents

---

About the manual ii

## **1. Introducing miroHIGHRISC 1**

---

Features 1

Before you start 3

## **2. miroHIGHRISC Hardware 4**

---

Board layout 4

Setting the DIP switches 5

Installing the upgrade kit 8

Installing the board 9

## **3. miroHIGHRISC Software 11**

---

Overview 11

Installing the software 12

## **4. Specifications 19**

---

## **Appendices:**

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Appx. A: Addresses I

Appx. B: In case of problems III

Index

Information on possible changes that occurred after the manual has been printed is given in the INFO files on the disks supplied with your system.



# About the manual

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## Where do you find what?

To provide an overview, in the following you will find the content of the individual chapters of your miroHIGHRISC User's Manual.

**1. Introducing miroHIGHRISC** introduces the miroHIGHRISC board and lists its features and system requirements.

**2. miroHIGHRISC Hardware** describes the hardware components of the miroHIGHRISC board, how to set the DIP switch, how to install the upgrade kit (SIMM) and how to install the board.

**3. miroHIGHRISC Software** describes how to install the miroHIGHRISC software.

**4. Specifications** includes the technical data of the miroHIGHRISC board.

In the **Appendices** you find information on the addresses used by miroHIGHRISC as well as on how to eliminate possible malfunctions.

## Conventions

In the margins you will find subheadings as well as **ideo-grams** which will help you to find your way through this manual more quickly.



In case you want to use your miroHIGHRISC board together with miroTIGER, this ideogram indicates the text passages which only apply to this case.



Important text passages are marked by the symbol you see in the margin.

All **commands** you have to enter via the keyboard appear in this font: **install<↵>**

<↵> stands for the <Enter> key.



# 1. Introducing miroHIGHRISC

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## Features

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miro's **miroHIGHRISC** is a universal PC acceleration board for computation-intensive PC applications.

q **RISC processor**

miroHIGHRISC is based on a RISC processor of the MIPS R3000 series. In the past, RISC processors were only used in workstations. You could say that miroHIGHRISC is an entire workstation on a single expansion board and compatible with popular workstations.

q **«Team work» miroHIGHRISC/miroTIGER**

miroHIGHRISC and miroTIGER are the perfect team for 3D computer graphics on the PC. miroHIGHRISC is an acceleration board. To get the graphics output the miroHIGHRISC is connected directly to the miroTIGER graphics board. The miroTIGER part of the team generates the graphics screen and activates the monitor. At the same time, miroHIGHRISC receives the design data and, using them as base, calculates the views in perspective.

q **Local bus**

The data is transferred directly via a 32-bit bus between miroHIGHRISC and miroTIGER, thus assuring top transfer rates (up to 100 MB/s).

q **Double buffering**

Teamed with miroTIGER, miroHIGHRISC can take advantage of miroTIGER's double buffering function. This means screen redraws without any delay.



q **miro3D-VIEWER**

Computation-intensive 3D operations will benefit the most from miroHIGHRISC. These operations are realized by the 3D extension for the display list driver miroGTI12, the miro3D-VIEWER. This miro3D-VIEWER works with a 3D display list, making lightning-fast rendering and shading operations possible. Thanks to this speed, shaded or rendered objects are rotated on the screen in real time so they can be displayed from different perspectives.

q **Application acceleration**

miroHIGHRISC also accelerates PC applications. Computation-intensive applications are carried out by the miroHIGHRISC board and thus accelerated.\*

q **Open GL**

The software supplied with miroHIGHRISC includes Open GL, a graphics library for 3D operations (e.g. texture mapping). Open GL is a 3D graphics standard which will apply to both PC and workstations. Renowned software developers have already obtained licensing for Open GL.

\* Software supporting the acceleration by the miroHIGHRISC board will be available soon.



# Before you start

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## System requirements

Before you begin to install miroHIGHRISC make sure that your system meets the following requirements:

- IBM AT or fully compatible computer with an empty 16-bit slot or EISA slot
- miroTIGER board of the version Rev. B



## Package contents

Your miroHIGHRISC package should include the following:

- miroHIGHRISC board with 8 MB memory and connection cable already hooked up
- disk set
- documentation
- optional:  
upgrade kit(s) with SIMM(s), 8 MB each

If parts are missing, please contact your dealer.

## Electrostatic charge

Expansion boards are sensitive to electrostatic charge. To avoid damages caused by electrostatic charge keep the board in its protective bag until you are ready to install it. Keep the bag for future transports.

Discharge electrostatic charge from you before touching computer components with your hands or with tools.

## Tools

You will need a screwdriver to install the miroHIGHRISC.



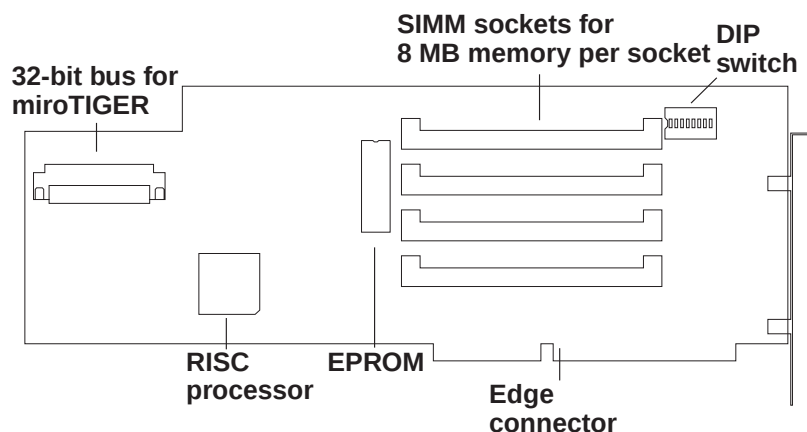
## 2. miroHIGHRISC Hardware

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### Board layout

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The following illustration shows the miroHIGHRISC board with its most important components and connectors.



*Board layout: miroHIGHRISC*

#### **32-bit bus connection to miro- TIGER**

miroHIGHRISC is connected directly to miroTIGER via the 32-bit bus. The cable is connected to miroHIGHRISC at the factory. Via the 32-bit bus the RISC processor can access the display memory of the miroTIGER extremely fast (with up to 100 MB/s). To avoid any loss of signal quality, the connecting cable is designed as short as possible.

#### **RISC processor**

The R3000/3010-33MHz-RISC processor is the heart of miroHIGHRISC, taking over complex operations such as calculating the different perspective viewpoints from the design data.

#### **EPROM**

For one, the EPROM includes test routines that test the most important components of the miroHIGHRISC hardware after you started the system. Secondly, a boot routine handles the communication between the miroHIGHRISC board and the computer.

## SIMM socket

Up to 4 SIMMs with 8 MB each (totalling 32 MB) can be inserted in the SIMM sockets of the miroHIGHHRISC board. The basic model of the miroHIGHHRISC has one SIMM in the socket at the very bottom.

## DIP switch

Use the DIP switch to set the I/O address range used by miroHIGHHRISC's control register. For the correct settings, check the following chapter.

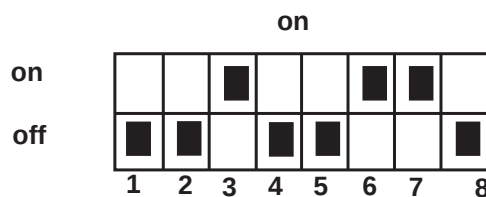
# Setting the DIP switches

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Before you get to the hardware installation, set the DIP switch correctly. Check the following illustration for the settings done at the factory.

## Switches 1-7

Switches 1 to 7 set the I/O address range used by miroHIGHHRISC's control register. Default is the address range **368h - 36Bh**.



*DIP switch: Factory setting*

If you want to run miroHIGHHRISC together with the miroTIGER graphics board, you can usually set the switches 1 to 7 on the miroHIGHHRISC the same as the switches 1-1 to 1-7 of the miroTIGER. This means miroHIGHHRISC is occupying an address range close to the one occupied by miroTIGER.



The following illustration shows which DIP switches on the miroHIGHHRISC board correspond to what addresses.

**I/O address ranges: miroHIGHHRISC**

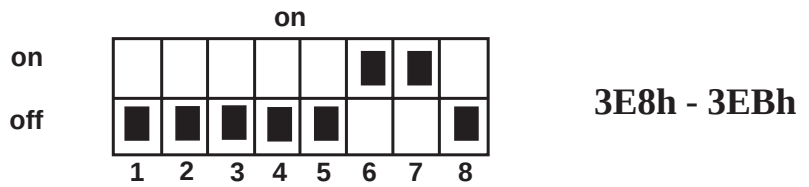
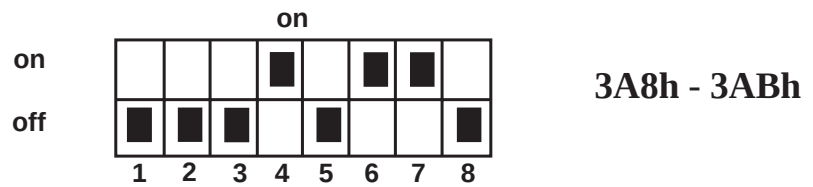


If another component of your hardware occupies the same I/O address as your miroHIGHRISC, you will have a bus conflict. In this case miroHIGHRISC won't run and your hardware might be damaged. If you do have a bus conflict, change the position of the switches to one that is different than the default given by miroTIGER. (Example: On miro-

|     |   |    |   |   |   |   |   |   |   |  |  |  |
|-----|---|----|---|---|---|---|---|---|---|--|--|--|
|     |   | on |   |   |   |   |   |   |   |  |  |  |
| on  |   |    | ■ | ■ | ■ | ■ | ■ |   |   |  |  |  |
| off | ■ | ■  |   |   |   |   |   |   | ■ |  |  |  |
|     |   | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |  |
|     |   |    |   |   |   |   |   |   |   |  |  |  |
|     |   | on |   |   |   |   |   |   |   |  |  |  |
| on  |   |    | ■ | ■ | ■ | ■ |   |   |   |  |  |  |
| off | ■ | ■  |   |   |   |   |   | ■ | ■ |  |  |  |
|     |   | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |  |
|     |   |    |   |   |   |   |   |   |   |  |  |  |
|     |   | on |   |   |   |   |   |   |   |  |  |  |
| on  |   |    | ■ | ■ | ■ |   |   | ■ |   |  |  |  |
| off | ■ | ■  |   |   |   | ■ |   |   | ■ |  |  |  |
|     |   | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |  |
|     |   |    |   |   |   |   |   |   |   |  |  |  |
|     |   | on |   |   |   |   |   |   |   |  |  |  |
| on  |   |    | ■ |   |   | ■ | ■ |   |   |  |  |  |
| off | ■ | ■  |   | ■ | ■ |   |   |   | ■ |  |  |  |
|     |   | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |  |
|     |   |    |   |   |   |   |   |   |   |  |  |  |
|     |   | on |   |   |   |   |   |   |   |  |  |  |
| on  |   |    | ■ |   | ■ | ■ | ■ |   |   |  |  |  |
| off | ■ | ■  | ■ |   |   |   |   |   | ■ |  |  |  |
|     |   | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |  |
|     |   |    |   |   |   |   |   |   |   |  |  |  |
|     |   | on |   |   |   |   |   |   |   |  |  |  |
| on  |   |    |   | ■ | ■ | ■ | ■ |   |   |  |  |  |
| off | ■ | ■  | ■ |   |   |   |   |   | ■ |  |  |  |
|     |   | 1  | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |  |
|     |   |    |   |   |   |   |   |   |   |  |  |  |

TIGER the I/O address range is set to 300h - 307h. Choose the address range 388h - 38Bh for miroHIGHRISC).





You need to enter the I/O address via the miroHIGHRISC software. Memorize the I/O address - better yet, write it down.

### Switch 8

You should not alter the default setting of switch 8.

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## Installing the upgrade kit

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The miroHIGHRISC basic version has 8 MB memory, but you can upgrade that memory to up to 32 MB with upgrade kits at 8 MB each.

+

Only an authorized miro reseller may install the SIMMs.

The illustration on page 4 shows the position of the SIMM socket on the miroHIGHRISC board. At the factory the bottom SIMM socket (the one closest to the edge connector) of the miroHIGHRISC board is equipped with a SIMM.

+

Make sure that always the SIMM socket closest to the bottom (already filled) socket gets the next upgrade. For example: if you want to add three SIMMs, they have to be added one after the other without skipping a socket.

To make the installation of the SIMMs easier, we suggest to start with the socket at the far back and to proceed to the front; it might be necessary to remove the front SIMM.

This is how the SIMM(s) should be installed:

- **You have already installed miroHIGHRISC and now want to have it upgraded:**

The computer and all peripheral devices connected to it need to be turned off. All power cables and connecting cables need to be disconnected. Remove the computer's cover. Touch the power unit to discharge any electrostatic charge.

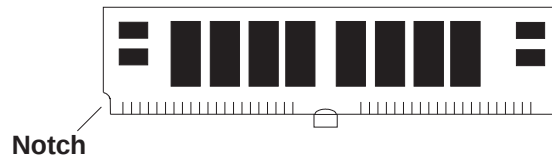
- Put miroHIGHRISC on a level surface, component side up, so that the edge connector is facing you.
- Hold the SIMM in such a way that the notch is at the bottom next to the connector on the left. Insert the SIMM at a slightly backward angle into the socket and press it down lightly.

Attention! Make sure you do not bend any contact pins of the SIMM socket as you do the installation.



- Press the SIMM slightly to the back so that the SIMM snaps into place and the latches hold it.

Repeat these steps for each SIMM.



*SIMM*



## Installing the board

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After making sure the DIP switches are all set correctly and after perhaps upgrading the miroHIGHRISC board you can install miroHIGHRISC in your computer.

This is what you need to do:

- Turn off the computer and all peripheral devices connected to it. Disconnect all cables (monitor, keyboard, printer, etc.).
- Loosen the cover's screws and remove the cover. Keep the screws.
- Touch the power unit casing to discharge any electric charge.
- Select a free 16-bit slot (or EISA slot).

Select a free 16-bit slot or EISA slot **directly in front of** (the component side of) the built-in miroTIGER graphics board so that the connecting cable of the miroHIGHRISC board can easily be plugged onto miroTIGER.

- Carefully insert the miroHIGHRISC board into the slot. Make sure the board and connector are securely seated in the slot.



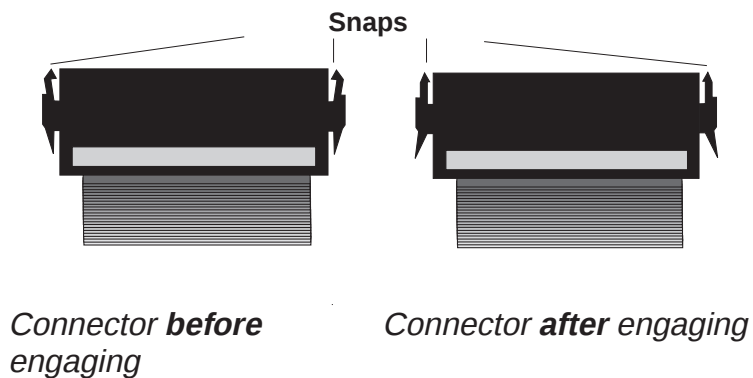


Do not attempt to use force when inserting the board! If at first you don't succeed, pull the board back out and make sure that the contacts have not become bent. Try inserting the board again.

- Connect the cable plugged onto the miroHIGHRISC with the edge connector for miroHIGHRISC on the miroTIGER board. The connector has to snap into the slot on miroTIGER. Press onto the front of the connector not the sides because the connector's snaps must be able to move to the outside as you insert the connector (see illustration).



- Using the screw from the computer's cover fasten the board's bracket to the back of the computer.
- Reassemble the computer cover and reconnect the peripheral devices.



1.

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2.

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### 3. miroHIGHRISC Software

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#### Overview

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After you have inserted the miroHIGHRISC in the slot you can install the software included on the miroHIGHRISC disk. The software includes:

- system files
- driver for AutoCAD 12:  
    miroGTI12 with the application miro3D-VIEWER
- installation program

If you didn't do so already, use the DOS command **DISKCOPY** to make a copy of the miroHIGHRISC disk. Store the original disk in a safe place and work only with the copy.

Before you start the software installation, make sure these requirements are met:

+

To run properly miroHIGHRISC needs 16 KByte in your computer's Upper Memory, that is the range between 640 KByte and 1 MByte; this section must be reserved for miroHIGHRISC. If you are not certain that your system meets this requirement, please read Appendix A.

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To install miroGTI12 with the miro3D-VIEWER for miroHIGHRISC, you first have to install miroGTI12 for the miroTIGER board.



## Installing the software

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Use the installation program to install the miroHIGHRISC software. The installation program works both with the mouse or keyboard and also has an integrated on-line Help function. This is what you need to do:

- Start the installation program from the disk by entering **install**<↵>.
- If applicable choose the language you want to do the installation in. If this is an initial installation you will now get a warning. Read it and then use the command **Continue** to switch to the Main Menu.

| miroHIGHRISC Installation - Main Menu                                                                    |                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>Current information Install System Check board Install driver : AutoCAD 12  End          Back</pre> | <pre>- Install System -  After you have installed your miroHIGHRISC hardware, the system software must be installed and configured.  Press Enter or click the mouse to get to the installation menu.</pre> |
| <pre>&lt;↑↓→&gt; = SELECTION   &lt;↵&gt; = CONFIRM   &lt;ESC&gt; = BACK</pre>                            |                                                                                                                                                                                                            |

*Main Menu of the installation program*

You will find these commands in the Main Menu:

– **Current information:**

Any changes or new information which occurred since the manual was printed will be included in information files that can be called up with this command.

– **Install system**

Use this command to install and configure miroHIGHRISC.

– **Check board**

With this function you can test miroHIGHRISC.

– **Install driver: AutoCAD 12**

Click this menu item to install the driver miroGTI12 with the miro3D-VIEWER.

**Installing the system** The first step of the installation process is installing the miroHIGHRISC system files.

- From the main menu select the command **Install system** to switch to the corresponding menu.

| miroHIGHRISC Installation - Install System                                                                           |                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Source : A:\</p> <p>Destination: C:\HIGHRISC</p><br><br><p>Configure</p> <p>Install                      Back</p> | <p>- Install driver -</p> <p>When you activate this menu item the system programs are copied to the directory on the hard disk you specified.</p> <p>If you have installed a miroTIGER, the batch file C:\TIGER.BAT is extended. Also, the batch file C:\AUTOEXEC.BAT is modified. The old file is saved with the extension ".MIR".</p> <p>Then the driver configuration is called.</p> |
| <p>&lt;↑↓→&gt; = SELECTION    &lt;↵&gt; = CONFIRM    &lt;ESC&gt; = BACK</p>                                          |                                                                                                                                                                                                                                                                                                                                                                                         |

*Menu: Install System*



Now the installation program needs to know the drive and path for the directory to be created for the miroHIGHRISC system files (default is **C:\HIGHRISC**).

- If you want the default press Enter; if you don't, overwrite the default and then press Enter.
- Choose the option **Install** and press Enter.

As a result of the installation the miroHIGHRISC system files will be copied into the directory you specified. In order to use miroHIGHRISC together with miroTIGER the TIGER.BAT file will be modified. (TIGER.BAT is the batch file that starts TIGA, you find it in the C: directory.) AUTOEXEC.BAT will also be modified.

### Configuring the system

After the installation the menu **Configure System** appears automatically.

| miroHIGHRISC Installation - Configure System                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |     |     |     |     |     |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|---|---|------|-----|-----|----|----|----|----|----|------|-----|-----|----|----|----|----|-----|------|-----|-----|----|----|----|-----|----|------|-----|-----|----|-----|----|----|----|------|-----|-----|----|-----|-----|----|----|------|-----|-----|-----|----|----|----|----|------|-----|-----|-----|----|-----|----|----|------|-----|-----|-----|-----|-----|----|----|
| <p>▲ 368h - 36Bh<br/>           308h - 30Bh<br/>           I/O address: 300h - 303h<br/>           318h - 31Bh<br/>           ▼ 348h - 34Bh</p> <p>▲ C800h - CBFFh miroTIGER<br/>           CC00h - CFFFh<br/>           Memory addr: D000h - D3FFh used<br/>           D400h - D7FFh used<br/>           ▼ D800h - DBFFh used</p> <p>Available<br/>           memory : 16 MB</p> <p>Configuration      Back</p> | <p>- Select I/O address -</p> <p>Select the miroHIGHRISC I/O address which corresponds to the setting of the DIP switches on the board. The default setting is 368h.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">##</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> </tr> </thead> <tbody> <tr> <td>308h</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>300h</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>OFF</td> </tr> <tr> <td>318h</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>OFF</td> <td>ON</td> </tr> <tr> <td>348h</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>368h</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>388h</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>3A8h</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>ON</td> <td>ON</td> </tr> <tr> <td>3E8h</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>ON</td> </tr> </tbody> </table> | ##  | 1   | 2   | 3   | 4   | 5   | 6 | 7 | 308h | OFF | OFF | ON | ON | ON | ON | ON | 300h | OFF | OFF | ON | ON | ON | ON | OFF | 318h | OFF | OFF | ON | ON | ON | OFF | ON | 348h | OFF | OFF | ON | OFF | ON | ON | ON | 368h | OFF | OFF | ON | OFF | OFF | ON | ON | 388h | OFF | OFF | OFF | ON | ON | ON | ON | 3A8h | OFF | OFF | OFF | ON | OFF | ON | ON | 3E8h | OFF | OFF | OFF | OFF | OFF | ON | ON |
| ##                                                                                                                                                                                                                                                                                                                                                                                                               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2   | 3   | 4   | 5   | 6   | 7   |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| 308h                                                                                                                                                                                                                                                                                                                                                                                                             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OFF | ON  | ON  | ON  | ON  | ON  |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| 300h                                                                                                                                                                                                                                                                                                                                                                                                             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OFF | ON  | ON  | ON  | ON  | OFF |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| 318h                                                                                                                                                                                                                                                                                                                                                                                                             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OFF | ON  | ON  | ON  | OFF | ON  |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| 348h                                                                                                                                                                                                                                                                                                                                                                                                             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OFF | ON  | OFF | ON  | ON  | ON  |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| 368h                                                                                                                                                                                                                                                                                                                                                                                                             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OFF | ON  | OFF | OFF | ON  | ON  |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| 388h                                                                                                                                                                                                                                                                                                                                                                                                             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OFF | OFF | ON  | ON  | ON  | ON  |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| 3A8h                                                                                                                                                                                                                                                                                                                                                                                                             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OFF | OFF | ON  | OFF | ON  | ON  |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| 3E8h                                                                                                                                                                                                                                                                                                                                                                                                             | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OFF | OFF | OFF | OFF | ON  | ON  |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |
| <↑↓> <POS1 END>=SCROLLING <↵>=CONFIRM <↔>=NEXT FIELD <ESC>=BACK                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |     |     |     |     |     |   |   |      |     |     |    |    |    |    |    |      |     |     |    |    |    |    |     |      |     |     |    |    |    |     |    |      |     |     |    |     |    |    |    |      |     |     |    |     |     |    |    |      |     |     |     |    |    |    |    |      |     |     |     |    |     |    |    |      |     |     |     |     |     |    |    |

Menu: Configure System



You need to make the following entries:

- The **I/O address range** that was set via the DIP switches 1 to 7.
- The **Memory address** for miroHIGHRISC, 16 KByte. Here you need to make sure that this address is free and not used by miroTIGER or other expansion boards. The installation program automatically scans the memory and indicates which addresses are free and which already occupied. The memory occupied by miroTIGER is marked by the suffix *miroTIGER*, otherwise reserved memory is marked with *used*.
- **Available memory**; as long as you entered the correct I/O address (see above), the memory expansion of your miroHIGHRISC board that is 8, 16, 24, or 32 MB, will be recognized automatically so that usually you don't need to answer anything. One exception: you did a software installation without having a miroHIGHRISC in your computer.

This is what you need to do in this case.

- Make the necessary entries.
- Select the menu item **Configure**.

After that TIGA is loaded if installed on your computer and miroHIGHRISC is initialized. As soon as you are back to the Main Menu the configuration is completed.



## Testing the board

This menu item allows you to check whether the miroHIGHRISC hardware runs properly, provided you already installed the system files and configured miroHIGHRISC.

Here is what you need to do:

- In the main menu select **Check board**.
- In the following menu select the command **Test**.

The program now executes the individual tests. The result

| miroHIGHRISC Installation - Checking board                                                                                      |                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>DRAM Mapping ..... DRAM ..... VRAM ..... Bus Locking ..... DRAM Arbitration ..... Snooping .....  Test          Back</pre> | <pre>- Test -  Press Enter or click &lt;Test&gt; with the mouse for checking the following hardware components:  DRAM Mapping DRAM VRAM Bus Locking DRAM Arbitration Snooping</pre> |
| <pre>&lt;←→&gt; = SELECTION  &lt;↵&gt; = CONFIRM  &lt;ESC&gt; = BACK</pre>                                                      |                                                                                                                                                                                     |

*Menu: Checking Board*

will appear on the screen. When the test is over you will be in the main menu once more.

## Installing the driver: AutoCAD 12



If you already installed and configured your system, you can now install the driver for AutoCAD 12, miroGTI12, with the application miro3D-VIEWER. Prior to this miroGTI12 must have been installed for your miroTIGER graphics board.

- Select **Install driver: AutoCAD 12** in the Main Menu.



In the next menu the source and the target for the driver is specified:

- The source is the drive and the subdirectory from where the driver is to be copied that is usually the miroHIGHRISC installation disk.
- The target is the subdirectory where the miroGTI12 driver for miroTIGER is located; as target path the path set by the miroTIGER installation program is taken. This path cannot be overwritten.
- Check the paths given by the program and – if necessary overwrite them.

| miroHIGHRISC Installation - Install AutoCAD 12 driver                       |                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Source : A:\</p> <p>Destination: C:\ACAD</p> <p>Install      Back</p>    | <p>- Install driver -</p> <p>When you activate this menu item the driver miroGTI12 with the application miro3D-VIEWER for AutoCAD 386 Rev 12 is copied to the directory which contains the miroGTI12 driver for your miroTIGER.</p> |
| <p>&lt;↑↓→&gt; = SELECTION    &lt;↵&gt; = CONFIRM    &lt;ESC&gt; = BACK</p> |                                                                                                                                                                                                                                     |

*Menu: Install AutoCAD 12 driver*

- Make the necessary entries and then select **Install**.



Now miroGTI12 and the miro3D-VIEWER will be installed on your hard disk. You don't have to configure the driver. The software installation of your miroHIGHRISC system is now completed. Click **End** in the main menu to leave the installation program.

Please note: The installation and the configuration of the miroHIGHRISC system files and miroGTI12 driver with the miro3D-VIEWER depends on the installation of your miroTIGER system.

Please note: As soon as you reinstall miroGTI12 or TIGA with the miroTIGER installation program and/or you change the TIGA configuration miroHIGHRISC has to be installed completely once again.

Since the installation program has been copied to your hard disk during the initial installation (by default into the directory C:\HIGHRISC), with consecutive installations you can start the installation program from the hard disk.



## 4. Specifications

---

### Bus system

*PC bus:*

ISA AT bus; compatible with EISA bus

*Local bus:*

32-bit bus for miroTIGER

### Processor

MIPS R3000 with R3010A FPU

Clock rate: 33 MHz

Onchip cache: 1 KByte data, 4 KByte code

Performance: 33 MIPS, 33 MFLOPS

### Performance

2D: 150000 vectors/s with a vector length of 10 pixels

3D: 10000 triangles/s with 100 pixels each, flat shaded  
6000 triangles/s with 100 pixels each, Gouraud shaded

### Working memory

8 MB; upgradable to max. 32 MB

### miroHIGRISC/ miroTIGER

Video modes



| Pixels      | Colors                       |
|-------------|------------------------------|
| 1280 x 1024 | 16, 256, 65,536              |
| 1024 x 768  | 16, 256, 65,536, 16.7 mill.  |
| 800 x 600   | 16, 256, 65,536, 16.7 mill.. |
| 640 x 480   | 16, 256, 65,536, 16.7 mill.  |
| 768 x 576*  | 16, 256, 65,536, 16.7 mill.  |

\* TV timing (PAL/NTSC)

### Power consumption

with 8 MB DRAM: 2.9 A (typical value)

with 32 MB DRAM: 3.25 A (typical value)







## Appx. A: Addresses

---

If you want your miroHIGHRISC system to function without problems, it is important that you avoid address conflicts. This means that other components of your computer system may not use the same addresses as your miroHIGHRISC.

### – I/O address range

miroHIGHRISC occupies a 4 Byte I/O address range, its base address can be determined in 8-Byte steps via the DIP switches 1-1 to 1-7; default is **368h - 36Bh**. Check Chapter 2, section «Setting the DIP switches» for a list of the alternative addresses available and the corresponding switch settings.

### – 16 KByte memory mapped area

The miroHIGHRISC board occupies a 16 KByte block in the Upper Memory (between 640 KByte and 1 MByte) of the main memory. The memory is set via the installation program.

The following table gives an overview of the ten memory mapped areas available to miroHIGHRISC. These address ranges are the same as the ones you can set for miroTIGER.

|               |               |
|---------------|---------------|
| C800h - CBFFh | DC00h - DFFFh |
| CC00h - CFFFh | E000h - E3FFh |
| D000h - D3FFh | E400h - E7FFh |
| D400h - D7FFh | E800h - EBFFh |
| D800h - DBFFh | EC00h - EFFFh |

Using hardware such as network controllers and software like an Expanded Memory Manager (EMM) and Upper Memory Block Manager (UMB) can lead to address conflicts. To avoid these change the memory used by miroHIGHRISC board or exclude the memory reserved for the miroTIGER board for other hardware or software components. If you choose the latter option, the memory area selected for miroHIGHRISC has to be excluded from the



Memory Manager; to do so, make the necessary entry in the **CONFIG.SYS** file.

The following table shows the entries using the most common Expanded Memory Manager as example. Here the range C800-CBFF is off limits to the EMM. For more details check your Expanded Memory Manager manual.

| EMM        | Enter in CONFIG.SYS                   |
|------------|---------------------------------------|
| QEMM386    | DEVICE=...\QEMM386.SYS...X=C800-CBFF  |
| 386MAX     | DEVICE=...\386MAX.SYS...RAM=C800-CC00 |
| MS Windows | DEVICE=...\EMM386.SYS...X=C800-CC00   |
| MS DOS 5.0 | DEVICE=...\EMM386.EXE...X=C800-CC00   |
| DR DOS     | DEVICE=...\EMM386.SYS.../E=C800-CBFF  |



Please note: Since miroTIGER also has an address range the size of 16 KByte in the Upper Memory we suggest you select an address range for miroHIGHRISC that is directly next to the one for miroTIGER. This allows you to mark both ranges with a single entry in CONFIG.SYS.

## Appx. B: In case of problems

---

If your miroHIGHRISC system doesn't run properly, see if you can find the cause in this list and try to correct the error.

### **Problem: The computer does not boot.**

In case the computer with an already installed miroHIGHRISC does not boot, first turn both the computer and monitor off and open the computer's casing. Check the following:

- *Is the miroHIGHRISC board properly seated in the slot?*
- *Is the I/O address used by miroHIGHRISC also used by another component of your hardware?*  
If this is the case, change the base address of miroHIGHRISC's I/O port (see section «Setting the DIP Switches») or that of the hardware component in question.
- Put the miroHIGHRISC back into the computer. If you changed the setting of the DIP switches to allocate a new I/O address range to miroHIGHRISC you need to do a new software installation.
- Try starting again.



**Problem: The computer does boot, but won't run right.**

This might be caused by the 16 KByte address range in your computer's Upper Memory selected for miroHIGHRISC. You need to check the following:

- *Could it be that the address range reserved for miroHIGHRISC is also used by Expanded Memory Managers, Cache Memory Systems and the like?*

Look into the CONFIG.SYS file and make sure the memory reserved for miroHIGHRISC cannot be accessed by your Memory Manager. For details check Appendix A.

- *Does your computer have Secondary Cache (also Second Level Cache)?*

If it does you have to exempt the memory occupied by miroHIGHRISC (C000h - DFFFh) from «caching». The system range E000 - FFFF can continue to be «cached». When you choose the memory for miroHIGHRISC make sure it is in the C or D segment. For more details check your computer's manual.

If nothing seems to work, reinstall the software installation and choose another address range. Note: A new address range must also be closed off to access by the Memory Manager.



# Index

---

## A

Addresses I

AutoCAD 12 11, 16

## D

DIP switch 5 - 6

Double Buffering 1

## E

EPROM 4

## I

I/O addresses I, III, 5 - 7, 15

Installation

Board 9

Software 11

Upgrade kit 8

Installation program 12

## L

Local bus 1, 4, 19

## M

Memory addresses I, 15

Memory upgrade 8, 15

miro3D-Viewer 2, 11, 16

miroGTI12 11, 16

miroTIGER 1, 3 - 5, 7, 10

## O

Open GL 2

## R

RISC processor 1, 4, 19

## S

SIMM 3, 5, 8 - 9

SIMM socket 5, 8

Specifications 19



## **T**

Test 16

Troubleshooting III

## **V**

Video modes 19