miroVIDEO-Expert hard disk transfer program

miroVIDEO-Expert measures the performance of your hard disk drive.

To start miroVIDEO-Expert, double-click the miroVIDEO-Expert icon in the Program Group of your miro video board.

If more than one hard drive is installed in your system, you should generally test all hard drives present and then use the hard drive with the highest data rate for video.

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Analyse result

The data rate at which an M-JPEG video sequence can be captured without dropped frames is calculated from the data of the PCI memory link and the write speed of your hard drive.

The ideal image size and compression factor are highlighted in blue. The recommended data rate is displayed.

Harddisk speed

Select which hard drive you want to test the performance of and click on *Start Test*. The hard drive should be defragmented so that the results are real values.

The hard drive test will first test the speed at which data is written to the hard drive and/or the speed at which data can be read from the hard drive. It then calculates the optimum image size with the respective compression factor.

Video standard/TV cropping

If you installed a miroVIDEO DC20 board, the program displays this board, if you installed a miroVIDEO DC1 board, the program displays miroVIDEO DC1. If you installed both boards, select the board for which you want to execute the hard disk transfer test.

In Europe PAL/SECAM is selected as TV standard, in the USA NTSC. Switch between both TV standards to see the difference in the data rate which can be achieved.

When enabling *TV Cropping*, video is recorded which will appear completely on the TV screen. Only irrelevant data at the image margin are cut off which reduces the data rate.

Audio settings

If you record audio data using compression, you cannot select the type of recording.

If you enable the *Audio Recording (uncompressed)* button, you can specify the sound recording quality.

Audio card type

Enter if you record sound with a 8 bit DMA or a 16 bit DMA sound board.

Start test

When clicking on *Start Test*, the miro hard disk transfer test starts.

Store

Select the hard drive (if more than one hard drive is present) that you want to use for capturing. Click on *Store* to use the set values.

Close

Click on *Close* to close the hard disk transfer program.

Technical background and tips

miroVIDEO EXPERT tries to support you to set your miroVIDEO board to the maximum data rate of your system. The type of optimization depends on the hard disk type (E-IDE, SCSI), the hard disk interface (PIO mode, Fast or Wide SCSI), the hard disk controller (slave, busmaster), the bus settings (ISA: waitstates, clock frequency, PCI: burst, processor clock), the operating system (Win 3.x, Win 95), your motherboard setup settings (E-IDE support, burst mode) and the driver support for your hard disk or controller.

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Preparation

Before you start testing your system and to be able to interpret the results correctly, make sure you know:

- your hard disk type (IDE, E-IDE, SCSI)
- your hard disk controller type (only SCSI)
- sound board type (8 bit DMA or 16 bit DMA)

Make sure your hard disk is not fragmented and you have enough space on your hard disk.

Measuring the data rate

The program creates a data block typical of the miroVIDEO DC20 (96K) and sends this to the hard disk several times. From the number of transferred blocks and the time it took to send them, the transfer rate for reading and writing can be calculated.
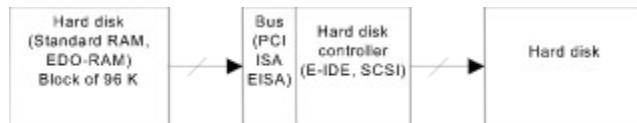
For Windows 3.11 and SCSI hard disks the 96K data block is divided and transferred in smaller blocks (2K) under Video for Windows so that the real data rate is considerably smaller than the measured data rate (50%).If possible, use Windows 95 for SCSI hard disks where this problem does not occur.
This rate can only be achieved if the computer has 100% time to transfer the data. Using a real application, however, e.g. VideoCapture, the processor is also busy with other tasks.

A measured high data rate, however, does not imply that your system settings are especially suitable for video editing because interruptions are not measured (hard disk calibration etc.) For the test program this means that there is a slight decrease in the data rate, for the real application a dropped frame occurs in case the image cannot be stored in the memory. In addition, you cannot tell by the measured data rate in which way the data blocks are transferred. In video editing, data occur in blocks. For NTSC data blocks of up to 128K (miroVIDEO DC20) or 32K (miroVIDEO DC1) have to be transferred 30 times per second. Therefore it is good to send a data block as fast as possible to the hard disk so that the system is no longer occupied and the hard disk or the hard disk controller can save the data (example: SCSI busmaster controller). An SCSI hard disk having a transfer rate of 1,5 MByte can be better for video editing than an E-IDE hard disk having a transfer rate of 2,5 MByte. The hard disk transfer speed is considerably higher on the outer tracks than on the inner tracks of a hard disk (Zone Block Recording) because there are more sectors while the rotation speed remains the same.

Sound recording

If you want to record sound in addition to video, you have to take this into consideration. Recording sound does not influence the hard disk speed but the time which remains to pick up" and to save the sound data. When recording sound at a high-quality in 16 bits and a sample rate of 44.1 kHz, 172K sound data have to be processed. When using miroVIDEO DC1 this means: 25% audio, 75% video (at a video data rate of 500K/s). Furthermore, you have to take into consideration that audio data are transferred via 8 bits DMA. This means that the system needs 17% of the time to transfer sound data (172K/1024K x 100%). miroVIDEO DC20 transfers 2.5 MB video data in the same time.

Evaluation of the result

After the test has been completed, the result for the tested hard disk is displayed as a bar. For (E)-IDE disk the difference between write and the read speed should not exceed 20 %. A difference higher than 20 % hints at a fragmented hard disk or a cache (smartdrive) you should disable when recording and editing video. Under Windows 3.11 you should disable the 32-bit-access for E-IDE hard disks, if you do not use a special 32-bit E-IDE driver. For SCSI especially in conjunction with a busmaster controller the difference can be higher than 50%. If you use a SCSI hard disk under Windows 3.11, the blocks may be divided so that there is a drop in the data rate.

From the write speed of your hard disk and the transfer speed of your miroVIDEO board and possible audio options a maximum data rate can be calculated. This is an ideal rate which can be influenced under real conditions by the exploitation of the system resources (network, DOS box, processor). If your system does not reach the calculated value, it may be busy with other tasks in the background. From the maximum data rate the compression factor can be calculated for the image format. NTSC fullsize video creates a flow of data of 18 MB/s. To achieve a good quality, the compression factor should not exceed 12:1 otherwise JPEG artifacts occur. Optimize the image size and the audio options to get a lower compression factor.

Check list

General

in the BIOS Setup PCI Burstmode enabled?

Smartdrive disabled?

E-IDE hard disk

in the BIOS setup E-IDE or with a driver enabled?

under Windows 3.11 32-bit-access disabled, if no special 32-bit driver is installed?

SCSI hard disk

under Windows 3.11 32-bit driver loaded?

Windows 95 recommended

Further information

For further information on the optimization, read the current README files for your miroVIDEO board. Look into the mailbox for new drives and README files or ask your vendor. If you want to purchase a new system, test this with your miroVIDEO board and miroVIDEO EXPERT.