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tisch ausgestattet. Wir bitten darum, dies als Vorteil zu sehen. Es macht uns zusaetzliche Arbeit. Bitte kritisieren Sie nicht, dasz bei einer anderen Karte z.B. aktuellere oder andere Software mitgeliefert wurde. Mit dieser Argumentation waere die Ihnen vorliegende Karte mit wenig und uralter Software bestueckt, da nichts wirklich Aktuelles ausgeliefert werden koennte.

Version vom 27.May.1999

Chapter 2

Installation

At this area of the manual there are many links to images which are located on the Melody CD. Images located in 'Einbau.ham8' are intended for lower-end machines as they need less memory and software support than the same stuff which is located in 'Einbau.iff24' at higher quality. Read the text and have a look at the images at the same time, please (take Multiview for example). With this combination it should be easy to install Melody1200 into your Amiga. If it's still not 100 percent sure how to install please contact someone having more knowledge regarding computers and electronics or simply write an E-Mail to Kato. This kind of electronics is very sensitive regarding false handling. Take care it's done right because you might damage the board and/or the Amiga without getting waranty services. Gruner and katodev will try to fix damages as cheap as possible, though. Read the damn manual, please!

2.1 EMI, CE, ESD ...

2.1.1 Electrostatic Discharge

It shouldn't be required to tell about the danger of electrostatic discharge which is able to destroy modern electronics immediately. As it's very important, we'll have to do it again: Unplug the supply and discharge yourself by touching the metal shields of the machine before touching Melody or the mainboard etc. of the Amiga. Better don't wear a wool pullover or equivalent and pay special attention to the kind of flor you're standing on. Something which is very important but often not known is the disconnection of external devices. Especially cheap monitors and TV-sets are often putting very high voltages to the computer. Besides the danger for the person who installs the expansions or other peripherals this is a nice way to destroy something.

2.1.2 Radio Interferences (EMI)/CE

Since a few years there is a special law for europeen community partly equivalent to FFC rules in the US (regarding transmission of energy). In a predefined frame the law ensures a device is not to disturbed by another nor disturb another

Chapter 8

Programms located on the CD

The programms located on CD are offered for demonstration. Please have a look at their documentation about the limitations of usage. You don't own the programms because you own the Melody CD nor Gruner Buerotechnik or katodev takes any risk for you when using this software.

Any programm on CD offers various possibilities of usage. This text can only give a very short overview about its primary features using our limited view. Lokk at them yourself and even look for new revisions on Aminet and our Homepage in Internet.

- AMPlifier : Player for MPEG, AIFF using optional hardware decompression
- MusicIn : Conversation from AIFF and RAW to MPEG. This is for demonstration only.
- CDDA : Nice and stable commandline programm for reading audio CDs
- BurnIt : Demo of the well known CD-Mastering Software, which is even very nice for reading CDDA from CDs
- HDPlay : Harddiskrecording
- ....

There are various new tools available which are very usefull for Melody, too. It's even possible to the computer working as an inteligent CD-Player controlled via IR-control.
Look at 'InfraRexx' etc. in Aminet

to have a LED at the back of a tower. It's more usefull to connect the LED to the frontside. By the way: The cover which is installed at default has to get removed for sure.

2. Further expainations are equivalent to the ones used for a desktop machine go back for a few lines.

5.3.3 MelodyRecord

Another small tool is used to do recording at 8/16/24(20) bit. As AHI doesn't support more than 16 bits it's the only chance for doing full performance with Melody1200 today. It's a simple CLI based recording tool up to now. If it's called without parameters or with a '?' it outputs the possible parameters.

Chapter 4

Known Problems at special Configurations

For playback of MPEG audio with hardware support (Melody 1200-Plus or Pro) a plain 68000 microprocessor would be enough. When playing back 16-bit sound 170kB/s have to get transfered to the board continiously. This data usually has to be processed by a sound programm which might have to use 'power hungry' algorithms. This is no longer a job for weak CPUs. It's a question of usage which CPU is the right choice. Modern chips like 68060 are over 100 times faster than the 68000 used at the Amiga 500.
Please don't expect too much when using more than 15 years old processors! It's up to you to take a modern one.

Nearly all ZorroII-SCSI-Hostadapters are locking the expansion bus. This gives a negative effect on dataflow. If you're using an A1200 in a Tower together with Zorro expansion please think about getting a hostadapter which is integrated at the accelerator board. There are even Hostadaptors for PCMCIA which are forcing strong load to the CPU.
Reading CDDA files as AIFF or WAVE from a CD is a difficult job for the hardware. Up to our knowledge only drives from Plextor, Pioneer and Chinon are doing a usefull job. Other drives offer wrong data as soon as the reading stops for a very short time. Their hardware or firmware is not able to re-locate the position where they stopped reading. By the way: The same kind of problems happens at some well known CD-Writers and a DVD-Reader.
Regarding MPEG: Please keep in mind samplerates different to 44.1kHz are unusual and should better not used at the compressor. The special Melody may support much more rates, though.

- Multilayer PCB
- high quality adaptor (handmade using metall 'golden' RCAs) for easy connection of RCA cables

Special MPEG features of this Melody:
- high quality playback of MPEG sound (Layer 2+3) using specialized DSP

Chapter 6

Hints for Developers

6.1 Software

Don't try to access the hardware directly. It seems to be very easy but it's absolutely not. You won't be able to control all the board without receiving tons of trouble and sudden malfunktions! Additionally you can't take care for the expansions the driver allready knows from. You simply can't know! The drivers offer an abstraction from the hardware and stops people to care about special hardware. If there are problems or bugs at the drivers tell us about them and we'll try to fix them.

If further documentation is needed it can be ordered via E-MAIL. We can't give the overall design to you, though.

6.2 Hardware

This area was removed to save paper. If there is demand for special information simply get in contact with us.

2.2.2 Tower

We're very interested in getting Melody 1200 in any case. If there are any problems when mounting it into your special box put a mail to our direction. The ribbon wire must not extended in length without talking to us. Don't change anything at the hardware as this might make the board stop working after a time or start it working unstable. Talk to us and we'll be able to help you and other users which would receive the same problems in advance

We're starting with the interface part of Melody 1200:

1. It will find its place at the center of the mainboard. For this discription its needed to have a basic understanding how the board was mounted into the original case. It's simply impossible to talk about any tower housing available as we simply don't know every housing which is or was available. Reference points are missing. Have a look at the images and text done for the desktop for first, please!

2. Usually the metall shield is allready removed. Otherwise it should be possible to locate a small seperated part of this shield at the center of the mainboard. This thing has to get removed.

3. Now it should be possible to have a look at the chipmemory of the Amiga. If it's difficult to locate: Look for 4 chips with connectors of soldered holes for connectors around.

4. At the right lower side of this area there should be 2x11 golden connectors (direction from chipmem to CPU slot). There are some boards which were equipped with full number of connectors. Melody 1200 only cares for the special 2x11 connectors. At Melody1200's backside there is a matching connector. Regarding orientation: Melody covers the area of the chipmem. It's very important to connect it properly! Use much light for the job, please. Only at best case it doesn't work if this is done wrong!

Now it's time for the bigger Input and Output part:

1. Different to a plain A1200 there is no slot to install this part of the board. Because of this the mounting is very different to the desktop machine. Melody 1200 makes use of a 9-pin SubD connector. This makes it easy to install it into PC-based towers which offer additional holes for serial interfaces and so on. The second choice is to mount it to a bracket and maybe waste a Zorro-Slot if such expansion is installed. If you ordered Melody for Tower, you allready received a special bracket. Otherwise you may take one from an old PC serial board as an example or ask at your dealer. Unfortunately the peak- and error LED has to get removed (cut it!) as there is no usefull way to put it trough bracket. The brackets which are given with Melody 1200 offer an additional hole, but it's not easy to get it done without oldering iron. Additionally it's quite useless

Chapter 9

MPEG and other Sound

9.1 MPEG

9.1.1 What's MPEG Audio?

MPEG is an ISO standard. The format is a result of the work of the **Moving Pictures Expert Group**. As the name says it was primary done for films and movies. Maybe it's allready known becuase of the CDI (Philips) and even CD32 with FMV module.
We took the audio part out of MPEG to do a modern soundboard. In the following sentences a shortcut for MPEG-Audio (Layer 2 and 3) 'MPEG' is used.
The primary idea when using MPEG is to store more data onto a media than possible with normal CDDA (from audio CD) data. In times of internet even the time to transfer the data is important and finally the access is easier, too. Without some kind of compression it's simply impossible to put more data onto the same media. If strong compression of about 10:1 is needed this is too much for lossless compression. MPEG is compression with loss. The key benefit is its capability to detect what's audioble and what's not. As a generic result no loss can be recogniced even if skilled people are testing the sound.
This way of compressing audio data takes very much CPU power and the encoding and even decoding should be done by special hardware if possible. Load is quite high even if a 68060 50 Mhz is used. When getting higher loads short-term breaks due mouse movement are common. If people liked to play video of movies this would make it impossible to get a usefull result at Amiga. A video player is in prototpye stage at katodev. Ask for it if you like to have a look. A special Melody is capable playing multichannel MPEG. The sampler-ates defined at MPEG 1 are 32, 44.1 and 48 kSPS and are known from DAT and CD-Player.
Today 44.1kSPS is de-facto standard and no other rates should be used. Melody 1200-PLUS additionally supports 48kSPS and Melody 1200-PRO supports 48, 24, 22, 12 and 11kSPS as defined at MPEG-LSR or MPEG 2.5. 8, 16 and 32kSPS are intentionally not supported.

MPEG-Audio data gets transported in frames which are including a special number of sampling points. It's quite different to raw at this topic - especially

1.2 Why doing MPEG decompression in hardware?

Experience says many people still don't know about MPEG-Audio nor they don't know whey it's nice to use it. One example which should be easy to understand: It's possible to store about 10 hours of music on a CD-Recordable (CDROM) which is equivalent to about 10 CDDAs (AudioCD). This may help to save the money for a disc changer. Even the access to the tracks is usually much better and easier.
At Amiga there two major problems with audio:

- For first the hardware build into the Amiga offers quite low qulity of sound and offers much background noise even even produced by drives etc. There is no possibility for getting higher quality sound out of the machine. No 16-bit output no higher samplerates of 44100 SPS or 48000 SPS.
- If the data which should be played is compressed sound, a second problem might get noticeable: The CPU power of the system is too low to playback this kind of sound and music at good quality while working at normal tasks, too.

Even an MC68060 running at 50Mhz is 'burned' for the playback of MPEG-Audio. It may be possible to lower systemload by switching to bad quality modes but this is probably a very bad idea. Up to now the primary choice for Amiga is hardware based decoding and playback. Melody Soundboards make use of specialized Digital Signal Processors (DSPs) to get system's load down to a minimum (exception: Melody 1200base).
The software (which comes with Melody) used for playback of MPEG-Data pays special interest in offering a friendly behaviour to the system (f.e. serial interface and games).
At Melody1200-PLUS a very big buffer (FIFO) of 100kB is used. Different to usual designs Melody1200-PLUS is able to run its drivers at very low priority. This is nice for other maybe more importand programms which can be served first for a timeframe. This makes it possible to keep Amiga's benefit of low latency much more than usual.
Melody1200-PLUS and Melody1200-PRO offer hardware based help for Video-MPEG-Players to get sound and pictures synchronous (PLUS is best choice for this special job). Without this kind of help it's very difficult to get it work.

For sure the boards may be used without harddisk and low memory and so on. The question is if this is a good idea. It's recommended to use a good harddisk, CD-Reader and enough memory to have fun with Melody. Even a fast CPU is quite usefull for the job (f.e. 68040 or better).

Chapter 11

Thanks from Kato!

Many thanks to the people who spend their help to our project. Without them Melody wouldn't be existent:

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