



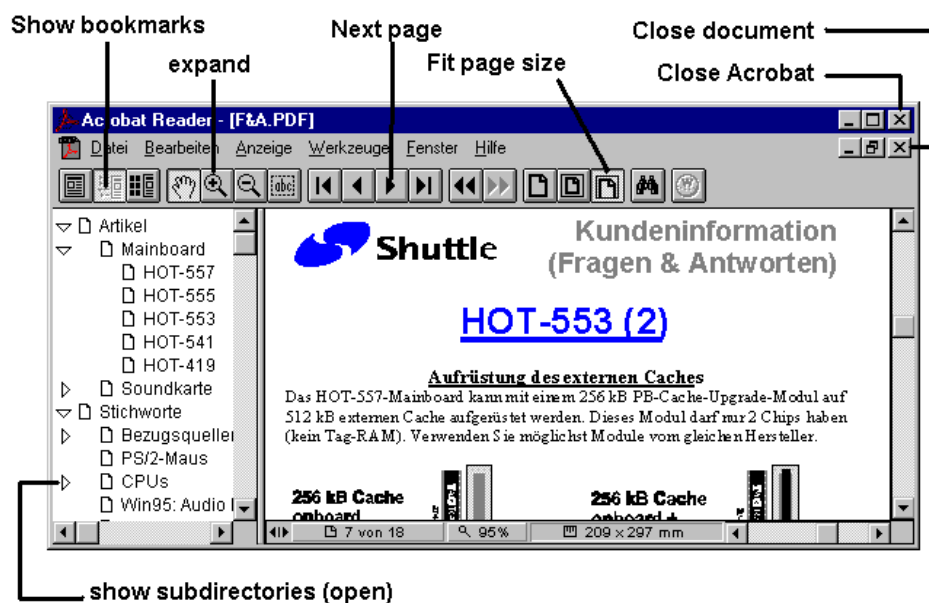
## Questions & Answers (Hotline)

This PDF-document has been released by the Shuttle Computer Hotline.  
It contains information not provided by the manuals.

### Contents:

- Frequently asked questions and answers
- General instructions
- Trouble-Shooting

### How to use Acrobat-Reader 2.1?



For further information on Acrobat Reader please refer to the online help-function.

### System crash with Acrobat Reader 2.0 and Elsa Winner VGA-card

If you use the "old" Acrobat Reader version 2.0 in combination with an Elsa Winner graphics card your system might crash when starting Windows. You will see a black screen and a blinking cursor if you hit ESCAPE. In this case please change the line

**system.drv=atmsys.drv**

in the [BOOT] section of your SYSTEM.INI to

**system.drv=system.drv**

Now Windows should work correctly. Please use version 2.1 of the Acrobat Reader to avoid the problem.

# **Where to get further information and updates**

## **Mailbox**

**Shuttle-Mailbox**, analog modem line(V.34 bis 28800 bps):

BBS - number: ++49-(0) 4121 / 470282

User name / password = "GAST" (for limited access as a guest)

Please call our hotline in order to be granted full access to all information .

## **Internet Homepage**

**<http://www.spacewalker.com>**

## **Spacewalker CDROM**

This CD contains manuals in four languages, up-to-date drivers and BIOS updates.  
All manuals are provided in the PDF file format.

## **Hotline**

Our hotline is a service for customers facing problems with products purchased directly from us. Users who are not registered customers ought to contact our local trading-partners in order to obtain further information.

## Mainboards (Overview)

Name	Size	CPUs	Chipset
<b>HOT-617</b>	AT	Intel Pentium Pro Processor	Intel 440FX
<b>HOT-613</b>	ATX	Intel Pentium Pro (opt. for 2 CPUs)	Intel 440FX
<b>HOT-571</b>	AT	P5 compatible	Intel 430TX
<b>HOT-569</b>	AT	P5 compatible	Intel 430TX
<b>HOT-567</b>	ATX	P5 compatible	Intel 430TX
<b>HOT-565</b>	AT	P5 compatible	Intel 430TX
<b>HOT-561</b>	ATX	Intel Pentium only	Intel 430HX
<b>HOT-559</b>	ATX	P5 compatible	Intel 430VX
<b>HOT-557</b>	AT	P5 compatible	Intel 430VX
<b>HOT-555(A)</b>	AT	P5 compatible	Intel 430VX
<b>HOT-553</b>	AT	P5 compatible	Intel 430HX
<b>HOT-541</b>	AT	P5 compatible	Intel 430FX
<b>HOT-539</b>	AT	Intel Pentium	UMC
<b>HOT-433</b>	AT	486er CPUs	UMC
<b>HOT-419</b>	AT	486er CPUs	OPTi

### More Topics...

**PS/2-Mouse-Connector**

**CPUs**

**Memory Modules**

**Postcodes**

**Bios-Update**

**USB**

**Sound Cards**

**Grafic Cards**



Questions & Answers  
(Support info)

## **HOT-571**

### **Windows 95 and TX-Chipset**

Holco has developed a patch to make Windows 95 able to recognize TX-chipset and USB-port. Windows 97 will support these items without patch.



Questions & Answers  
(Support info)

## **HOT-569**

### **Windows 95 and TX-Chipset**

Holco has developed a patch to make Windows 95 able to recognize TX-chipset and USB-port. Windows 97 will support these items without patch.



## Questions & Answers (Support info)

### **HOT-567**

#### **Windows 95 and TX-Chipset**

Holco has developed a patch to make Windows 95 able to recognize TX-chipset and USB-port. Windows 97 will support these items without patch.

#### **Important note regarding ATX- Mainboards**

Do not connect a power-cable to the power supply before system has assembled completely.

## HOT-565

### **How to configure system clock higher than 66 MHz**

More than 66 MHz system clock speed is beyond specification of Intel chipset 430VX, so this might not run properly. Shuttle Computer do not accept any liability when system doesn't run flawless at 75 MHz or more, because PCI-/ISA-Bus, Memory, IDE-Kontroller and Chipset run overspec.; EDO RAMs (60ns) are recommended.

System clock	PCI-Clock	over spec.	Configuration JP36
75 MHz*)	37,5 MHz	14 %	1-2 closed
83 MHz*)	41,5 MHz	26 %	5-6 closed

\*) is beyond specification of chipset

### **Do your ISA-Cards makes problems with TX-mainboard?**

Some manufacturer of ISA cards have modified their products to make them compatible to Intels 430 TX chipset. Please ask manufacturer of your ISA-card (e.g. ISDN card) for solutions first, if ISA-card doesn't run proper on HOT-565 mainboard.

### **Windows 95 and TX-Chipset**

Holco has developed a patch to make Windows 95 able to recognize TX-chipset and USB-port. Windows 97 will support these items without patch.

## HOT-613

### **Optional: one or two CPU-Sockets**

**Layout Version 1.3:** Dual Pentium Pro Mainboard with an additional voltage regulator module for each CPU.

**Layout Version 2.0:**

This Version has one voltage regulator onboard. The second CPU socket is optional (in this case second voltage regulator is enclosed as a module).

### **Important note regarding ATX**

Do not connect a power-cable to the power supply before system has assembled completely.



Questions & Answers  
(Support info)

## **HOT-617**

### **PCI Bus Master**

Note: The 4th PCI-Slot (count from ISA slots) is not able to support Bus-Master-Devices.

## **HOT-559**

### **Mainboard revisions**

<b>1.3</b>	without SCSI host adapter, support four PCI-Slot for bus masters
<b>1.5</b>	Adaptec onboard, PCI-Slot 1 support slave PCI device only (3 master slots)

### **Important note regarding ATX- Mainboards**

Do not connect a power-cable to the power supply before system has assembled completely.

### **Front-Panal-Connectors**

J13 is a 4-pin-connector which is divided to 2 pins for "Sleep" and 2 pins for "PWR"; both have the same meaning: you switch power supply to either ON or OFF by shorting for one second.

With JP6 "EPMI"-switch you can enter system in Power-Saving-Modus, which is indicated by a LED connected with J7.

### **SCSI-Termination**

If using SCSI Host Adapter onboard (HOT-559 Version 1.5 only) then make sure that SCSI bus is terminated properly. If both SCSI cables have been connected (50pin SCSI-II and 68pin SCSI-UW) then Jumper 23 and Adaptec Bios-Setup must be set to "Termination disabled".

## HOT-555(A)

### Mainboard-Versions

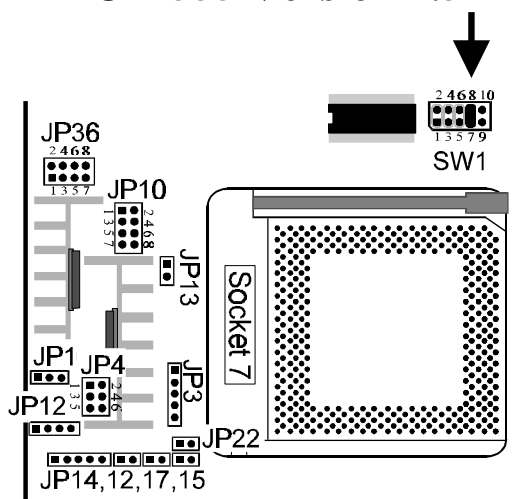
Mainboard	Voltage Regulator *)	Note
HOT-555 V1.4x	linear	Intel P55C: 166 MHz max.
HOT-555 V1.52	linear	Intel P55C can be configured to 166 MHz, may be configured to 200 MHz, new Jumper-Setting
HOT-555 V1.53	linear	Intel P55C: 200 MHz supported
HOT-555A	switched	Intel P55C and AMD K6 support

### Cyrix / IBM 6x86

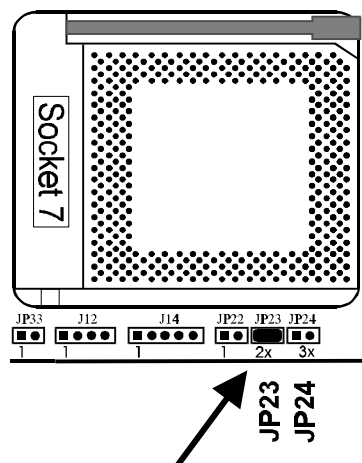
The manuals have been changed to ensure compatibility with Cyrix / IBM-6x86-CPU's. The new version show that Pin 7-8 of SW1 (HOT-555 Rev. 1.5x) or JP23 (HOT-555 V1.4x) have to be shorted. Mainboards shipped with new manuals have to be set as explained (older mainboard versions work with the new jumper settings, too.)

**Note:** If the HOT-555 does not work properly with Cyrix / IBM 6x86, then check the jumper settings as shown below.

#### HOT-555 Version 1.5x



#### HOT-555 Version 1.4x



## **HOT-555(A)**

### **How to configure system clock higher than 66 MHz**

More than 66 MHz system clock speed is beyond specification of Intel chipset 430VX, so this might not run properly. Shuttle Computer do not accept any liability when system doesn't run flawless at 75 MHz or more, because PCI-/ISA-Bus, Memory, IDE-Kontroller and Chipset run overspec.; EDO RAMs (60ns) are recommended.

System clock	PCI-Clock	over spec.	Mainboard	configuration
<b>75 MHz*)</b>	37,5 MHz	14 %	<b>HOT-555 V1.5x</b> <b>HOT-555A</b>	JPA: 3-4 closed 1-2, 5-6 opened JP37: 2-4 closed
<b>83 MHz*)</b>	41,5 MHz	26 %	<b>HOT-555A</b>	JP37: 5-6 closed

\*) is beyond specification of chipset

### **Can I mix SIMM- and DIMM-Modules?**

On mainboards with Intels 430VX chipset, the user should not populate both 5V SIMM modules and 3.3V DIMM modules at the same time. Even though we have some positive test results with this mixed configuration, we cannot recommend this and you must try on you own risc.

The DIMM socket share the same address lines with SIMM socket, there have some restriction of memory configuration:

SIMM 1 & 2	SIMM 3 & 4	DIMM 1	DIMM 2
Single-bank	Single-bank	Single-bank	Single-bank
Single-bank	Double-bank	Single-bank	Not Available
Double-bank	Single-bank	Not Available	Single-bank
Empty	Empty	Double-bank	Double-bank
Double-bank	Double-bank	Not Available	Not Available
Single-bank	Empty	Single-bank	Double-bank
Empty	Single-bank	Double-bank	Single-bank

Description	SIMM	DIMM
Single-bank	4, 16, 64 MB	8, 32 MB
Double-bank	8, 32 MB	16, 64 MB

## HOT-557

### Mainboard-Versions

Mainboard	Voltage Regulator *)	Note
HOT-557 V1.32	linear	Intel P55C can be configured to 166 MHz, may be configured to 200 MHz
HOT-557 V1.5	switched	Intel P55C and AMD K6 support

### Upgrading the external Cache

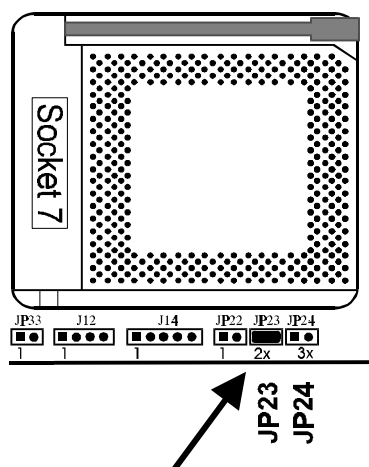
The HOT-557-Mainboard can be upgraded to 512KB external cache using a 256 kB PB-Cache-Upgrade-Module. There must be only two chips on the module (no Tag-RAM). Mainboard **and** cache-upgrade-module should be supplied from the same manufacturer.

### Cyrix / IBM 6x86

The manuals have been changed to ensure compatibility with Cyrix / IBM-6x86-CPU's. The new version show that JP23 have to be shorted. Mainboards shipped with new manuals have to be set as explained (older mainboard versions work with the new jumper settings, too.)

**Note:** If the HOT-557 does not work properly with Cyrix / IBM 6x86, then check the jumper settings as shown below.

### **HOT-557 Version 1.32**



## **HOT-557**

### **How to configure system clock higher than 66 MHz**

More than 66 MHz system clock speed is beyond specification of Intel chipset 430VX, so this might not run properly. Shuttle Computer do not accept any liability when system doesn't run flawless at 75 MHz or more, because PCI-/ISA-Bus, Memory, IDE-Kontroller and Chipset run overspec.; EDO RAMs (60ns) are recommended.

<b>System clock</b>	<b>PCI-Clock</b>	<b>over spec.</b>	<b>Mainboard</b>	<b>configuration</b>
<b>75 MHz*)</b>	37,5 MHz	14 %	<b>HOT-557 V1.3x</b> <b>HOT-557 V1.5</b>	JP36: 1-2 closed JP36: 1-2 closed
<b>83 MHz*)</b>	41,5 MHz	26 %	<b>HOT-557 V1.5</b>	JP36: 5-6 closed

\*) is beyond specification of chipset

### **Can I mix SIMM- and DIMM-Modules?**

On mainboards with Intels 430VX chipset, the user should not populate both 5V SIMM modules and 3.3V DIMM modules at the same time. Even though we have some positive test results with this mixed configuration, we cannot recommend this and you must try on you own risc.

The DIMM socket share the same address lines with SIMM socket, there have some restriction of memory configuration:

<b>SIMM 1 &amp; 2</b>	<b>SIMM 3 &amp; 4</b>	<b>DIMM 1</b>	<b>DIMM 2</b>
Single-bank	Single-bank	Single-bank	Single-bank
Single-bank	Double-bank	Single-bank	Not Available
Double-bank	Single-bank	Not Available	Single-bank
Empty	Empty	Double-bank	Double-bank
Double-bank	Double-bank	Not Available	Not Available
Single-bank	Empty	Single-bank	Double-bank
Empty	Single-bank	Double-bank	Single-bank

<b>Description</b>	<b>SIMM</b>	<b>DIMM</b>
Single-bank	4, 16, 64 MB	8, 32 MB
Double-bank	8, 32 MB	16, 64 MB

## **HOT-541 (1)**

### **Note on CPU-Configuration / Voltage-Regulator-Modules**

Some CPUs, which have high power consumption or need dual voltage support, need an external Voltage-Regulator-Module (VRM).

CPU	Voltage Regulator of the mainboard	Voltage-Regulator-Module (VRM)
Intel Pentium P54C	3,3V (oder 3,45V)	not required
Intel Pentium P55C 166 MHz	3,3V	HOT-1051/106 (2,8V)
Intel Pentium P55C 200 MHz	this type is not supported	
Cyrix 6x86 P90+ / P120+	3,3V (oder 3,45V)	not required
Cyrix 6x86 P150+ / P166+	deaktiviert	HOT-105/1051/106
Cyrix 6x86L	3,3V	HOT-1051/106 (2,8V)
AMD K5	3,6V	not required

### **Types of Voltage-Regulator-Modules**

Serial-No.	Art.	Type	Mark	Using for
105...	<b>HOT-105</b>	linear	big alum.-cooler	Cyrix 6x86 P150+/P166+ (Jumper Position A)
	<b>HOT-1051</b>	linear		This later version also support 2,8V for P55C, 6x86L,... (Jumper Position B)
106...	<b>HOT-106</b>	switched	no cooler	Dual-Voltage CPUs, too.

### **AMD K5**

If the CPU is marked "ABQ", set the CPU voltage to 3,6V. Use a very good cooler for the AMD CPUs. The speed of the AMD PR133 (100 MHz) is correctly shown by Bios-Version 541WUB10 or later.

### **AMD K5 CPU**

### **Does the system only work with an ISA-Graphics card ?**

This may happen if you use a Plug-and-Play Card with an old BIOS version. Use an ISA-VGA card to update the BIOS. The new version should be 541WUB0D or later.

### **Where to get updates**

## **HOT-541 (2)**

### **Pipeline-Cache-Modules**

Modern Mainboards use Pipeline-Burst-Cache (Except for the Pentium-Pro CPUs that feature an integrated 2<sup>nd</sup> level Cache). The PB-Cache-Modul is inserted into a Coast-socket and activated by a jumper.

- If there is no PB-Cache on the Mainboard, you need to use a PB-Cache module with 3 chips.
- If there is already 256 kB PB-Cache onboard, you need to use a module with only 2 chips (with no TAG-RAM)

Do not upgrade the cache if you use a Cyrix 6x86 P166+ CPU.

### **Versions of the HOT-541-Mainboards**

- 256 kB standard SRAM onboard
- 256 kB Standard SRAM onboard, empty Coast Socket. Standard Cache can be removed and substituted by a 256 kB PB-Cache-Module.
- No Standard SRAM and a PB-Cache-Modul.
- 256 kB PB-Cache only onboard.
- Layout 2.5 (latest Version) with 256 kB PB-Cache onboard and empty Coast-Socket for upgrades to 512 kB.

### **Windows 95 tries to install a PS/2-Maus that isn't there**

This bug of Bios-Version 541WSS09 is solved by an update to version 541WUB0D or later.

### **Where to get updates**

### **PCI-SCSI-Controller**

...You should always use the first PCI Slot (next to the ISA-Slot).

### **More Topics**

## **HOT-553 (1)**

### **Note on CPU-Configuration / Voltage-Regulator-Modules**

Some CPUs, which have high power consumption or need dual voltage support, need an external Voltage-Regulator-Module (VRM).

CPU	Voltage Regulator of the mainboard	Voltage-Regulator-Module (VRM)
Intel Pentium P54C	3,3V (oder 3,45V)	not required
Intel Pentium P55C 166 MHz	3,3V	HOT-1051/106 (2,8V)
Intel Pentium P55C 200 MHz *)	3,3V	HOT-106 (2,8V)
Cyrix 6x86 P90+ / P120+	3,3V (oder 3,45V)	not required
Cyrix 6x86 P150+ / P166+	deaktiviert	HOT-105/1051/106
Cyrix 6x86L	3,3V	HOT-1051/106 (2,8V)
AMD K5	3,6V	not required
AMD K6	3,3V	HOT-106 (2,9 / 3,2V)

\*) P55C may be run only with 166 MHz (on older HOT-553 mainboards)

### **Types of Voltage-Regulator-Modules**

Serial-No.	Art.	Type	Mark	Using for
105...	<b>HOT-105</b>	linear	big alum.-cooler	Cyrix 6x86 P150+/P166+ (Jumper Position A)
	<b>HOT-1051</b>	linear	big alum.-cooler	This later version also support 2,8V for P55C, 6x86L,... (Jumper Position B)
106...	<b>HOT-106</b>	switched	no cooler	above mentioned CPUs and AMD K6 also

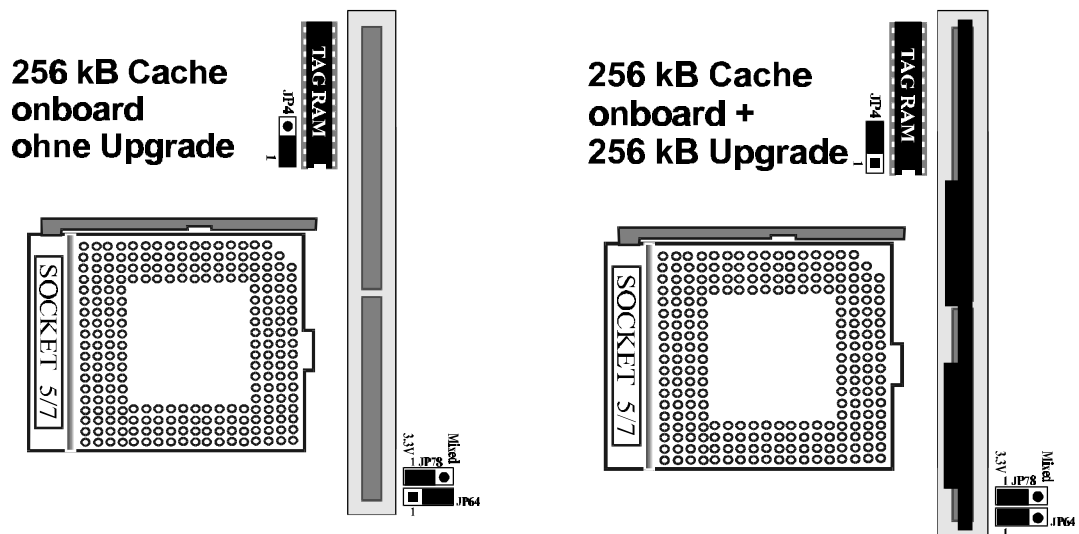
### **AMD K5 CPU**

Check the CPU-Voltage (ABQ-Typ set to 3,6V) and use a very good cooler.

## HOT-553 (2)

### PB-Cache upgrade

The HOT-557-Mainboard can be upgraded to 512KB Cache using a 256 kB PB-Cache-Upgrade-Module. This module must only have 2 Chips (no Tag-RAM).



Jumper-settings in old manuals have been wrong.

## HOT-553 (3)

### Information about Bios-Versions:

HOT-553 Bios- Version	integrated NCR-BIOS- Versions	REMARK (the Bios-Version is being displayed during the POST)
553WUQ03	3.06.00	
553WUQ05	3.06.00	A PCI-Device-List is display after the POST
553WUQ07	4.03.00	Bugfix for Matrox Mystic PCI-VGA-Card HDD-Power-Down with all IDE-harddrives Boot from CD and SCSI Intel P55C CPU ( MMX) is recognized
553WUQ09		supports AMD Write Allocate
553WUQ0A		supports AMD K6

### Caution when updateing to Versions lather than 553WUQ05...

- Only use the Program "533FLASH.EXE"
- Disable the BIOS-Setup password (if set) before updating the BIOS
- Enter at the DOS-PROMT: 533FLASH 553WUQ07.BIN
- **You can not use Intel-Flash-EPROMs when updating to a BIOS later than 553WUQ05 !!!** A "MX"-Chip , for example, works fine.
- Turn off the computer after the BIOS update. Load BIOS defaults.

### NCR810-SCSI-Controller

HOT-553 mainboard provides an integrated NCR-Bios, which automatically recogniced a standard NCR810-SCSI-Adapter which normally is a small PCI-card. NCR-Bios-version and driver-version of SCSI-Adapter must harmonize.

### Choosing boot device: CDROM, SCSI,...

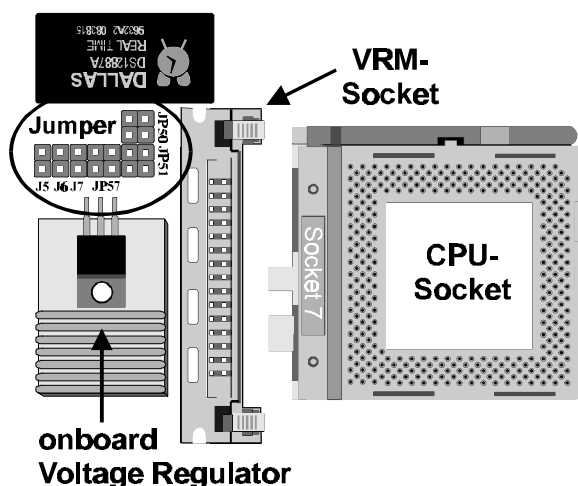
Not before Bios-Version 553WUQ06. You find the option "Boot Sequence" in Bios-Features-Setup.

### Power Managemant: Only one harddisk is power down

"HDD Power Down" option can be enabled in section "Power Management Setup". After the specified time of inactivity, the harddisk will be power down then.

**More Topics**

## Voltage Regulator Modules (VRMs) for HOT-541 and HOT-553



A Voltage Regulator Module is necessary for **HOT-541** and **HOT-553** Mainboards when power consumption of CPU is higher than onboard regulator can supply, or to support second voltage for dual voltage CPUs. The VRM is available in the following versions: HOT-105, HOT-1051 and HOT-106. It's placed into the VRM-Socket next to the CPU-Socket.

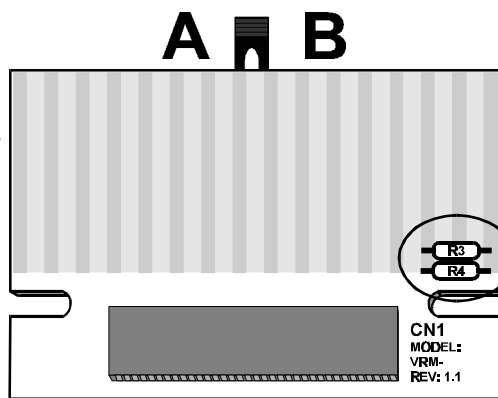
### VRM-Type: HOT-105 and HOT-1051



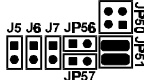
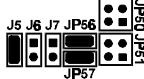
Distinguish HOT-105/1051 by R3

With resistors R3 and R4 is determined output voltage of the VRM when Jumper is set to position "B": (R4 = 360Ω)

Jumper position "B"		
VRM	Resistor R3	Voltage
HOT-105	360Ω (or/blu/blk/blk)	2,5 Volt
HOT-1051	280Ω (rd/gry/blk/blk)	2,8 Volt

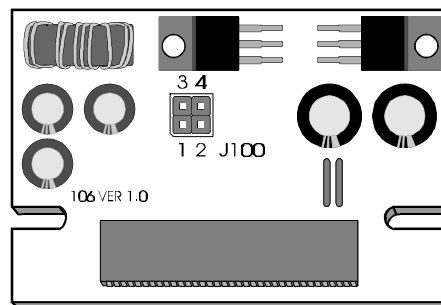
Set jumper to position "A" when using Cyrix 6X86 P150+ und P166+.



CPU	Voltage	Jumper on HOT-541/553	Voltage Regulator Module (VRM)
Intel Pentium P54C Cyrix 6x86 P90+ / P120+	3,45V (or 3,3V) by Mainboard		not required
AMD K5 (ABQ)	3,6V by Mainboard		not required
Cyrix 6x86 P150+ / P166+	by VRM		HOT-105 or HOT-1051 Jumper-Setting: "A"
Intel P55C (166 MHz only) Cyrix 6x86L	2,8V by VRM 3,3V by M/B		HOT-1051 Jumper-Setting: "B"

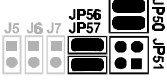
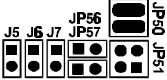

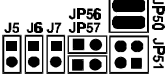

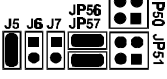

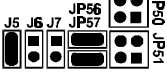

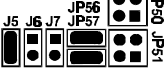

## Voltage Regulator Module - Type: HOT-106

- for use on HOT-553 and HOT-541
- provides second voltage for Dual-Voltage-CPU's (Intel P55C MMX, Cyrix 6x86L ...)
- provides also high current consumption for Cyrix 6x86 P150+/P166+ and Intel Pentium P55C 200 MHz
- switching regulator = less heat



### How to use VRM HOT-106

Insert the VRM-module into the VRM-Socket next to the CPU and set the jumpers according to the following table:

CPU-Type	Jumper setting		Voltage Supply Path
	HOT-541/553	HOT-106	
Pentium P54C Cyrix 6x86 P90+/P120+ AMD K5		not required	Single Voltage provided by HOT-553 / HOT-541 (manual of mainboard)
Cyrix/IBM 6x86 3,3V P150+/P166+			3,3V by HOT-106
Cyrix/IBM 6x86 3,52V P150+/P166+			3,5V by HOT-106
Pentium P55C MMX Cyrix/IBM 6x86L			2,8V by HOT-106 3,3V by HOT-553/541
AMD K6 PR166/PR200			2,9V by HOT-106 3,3V by HOT-553/541
AMD K6 PR233			3,2V by HOT-106 3,3V by HOT-553/541

\*) Intel Pentium P55C (MMX) can't be configured with more than 166 MHz on HOT-541 and some HOT-553 Mainboards.

## HOT-539

### Useful information

- **EMM386** Using the parameter "HIGHSCAN" for EMM386.exe results in a reset when accessing the HDD. In this case „Highscan“ has an address conflict with the IDE-Controller. Use parameters as shown in the next line: (154 kB free):  
**DEVICE=EMM386 noems I=E000-ECFF X=ED00-EDFF**
- **IDE-drivers can not be installed !** Check if the chipset ends with "AF" or "BF" since each chipset needs a special drivers disk. For the "BF"-Type Windows 95 drivers are available.
- **Compatibility Problems** always try a BIOS update
- **PCI-SCSI-Controller** use Slot 1 (next to the ISA-Slot).
- **PS/2-Maus:** HOT-539 has been shipped without this option in most cases.
- **Clear Password** The Password is stored in the CMOS-Memory of the Dallas-R.T.C. The RTC-Chip has to be changed in case the password has been forgotten.
- **Postcodes**

## HOT-433

Two versions of the HOT-433		
Dimensions	22 x 26 cm	22 x 22 cm
Bios-Versions	many	version 33 only
Chipsatz	UM8881F/8886AF/8663AF or UM8881F/8886BF/8663BF	UM8881F/8886BF/8663BF

### The Bios

Early versions of the HOT-433 used to have Flash-EPROMs, later versions since BIOS-Version 23 have EPROMs. If you remove the AMI-Bios-sticker, you will recognize the EPROM by a little window. You can see the Bios-Version on the bottom side of the screen during the POST, for example "41-P313-..." for the version "13".

### Usefull Information

- **IDE-drivers can not be installed ?** Check if the chipset ends with "AF" or "BF" since each chipset needs a special drivers disk. For the "BF"-Type Windows 95 drivers are available.
- **Cyrix 5x86** is supported by Bios-Version 15 or later
- **AMD 5x86** is supported since Bios-Version 23.
- **Compatibility Problems** alwas try to update the BIOS. Two add-on-cards are definitely incompatible with the HOT-433 , ISA-Lan-Card "Shine Net" by Longshine and the "Fritz-Card" for ISDN.
- **PCI-SCSI-Controller** use Slot 1 (next to the ISA-Slot).
- **PS/2-Mouse:** In most cases the HOT-433 has been shipped without this option. The option is only available when PS/2-Connectors have been integrated on the board.
- **Can remember the password ?** The new version of the HOT-433 provides jumper 43 to clear the password. The old version of the board has no jumper to clear the password, so the R.T.C. has to be changed.
- **Plug and Play:** The HOT-433-Mainboard has not been sold as a PnP-Mainboard. Only the Flash-EPROM version is PnP compatible.
- **AMD Non-S-Series & Power Saving Functions:** Using the AMD 486 N8T or NV8T in the Power Saving Mode occupys IRQ 10.
- **Postcodes**

## **HOT-419**

### **Versions of the HOT-419**

- HOT-419VZ: only 5V-CPU's, 72-pin-SIMMs
- HOT-419RZ: only 5V-CPU's, 30- and 72-pin-SIMMs
- HOT-419DZ or R2: also for 3V-CPU's, 72-pin-SIMMs
- HOT-419R3: New Layout / Jumpers (with 2 resistorpacks - RP ②)

### **HOT 419 DZ / HOT-419R2**

#### **Correction of the jumper-settings in old manuals**

Jumper	AMD 486 NV8T DX/DX2/DX4 (3,45V) ST 486 DX2 UMC U5S	INTEL S-Series DX/DX2/DX4 "&E..." 3,3 V oder 5V	CYRIX DX/DX2 CYRIX DX2V (3,3 oder 4V)	Intel P24D
42	open	1-2	2-3	open
43	DX2: 1-2 DX4: 2-3	1-2	2-3	1-2
44	open	close	open	open
45	open	close	open	open
46	open	close	open	open
47	open	open	close	open
48	open	open	close	open
49	1-2	1-2	2-3	1-2
77	1-2	2-3	1-2	1-2

ALL LISTED CPUS:	
Jumper	Position
3	1-2
5	2-3
8	1-2

### **VL-Karten work not stable ?**

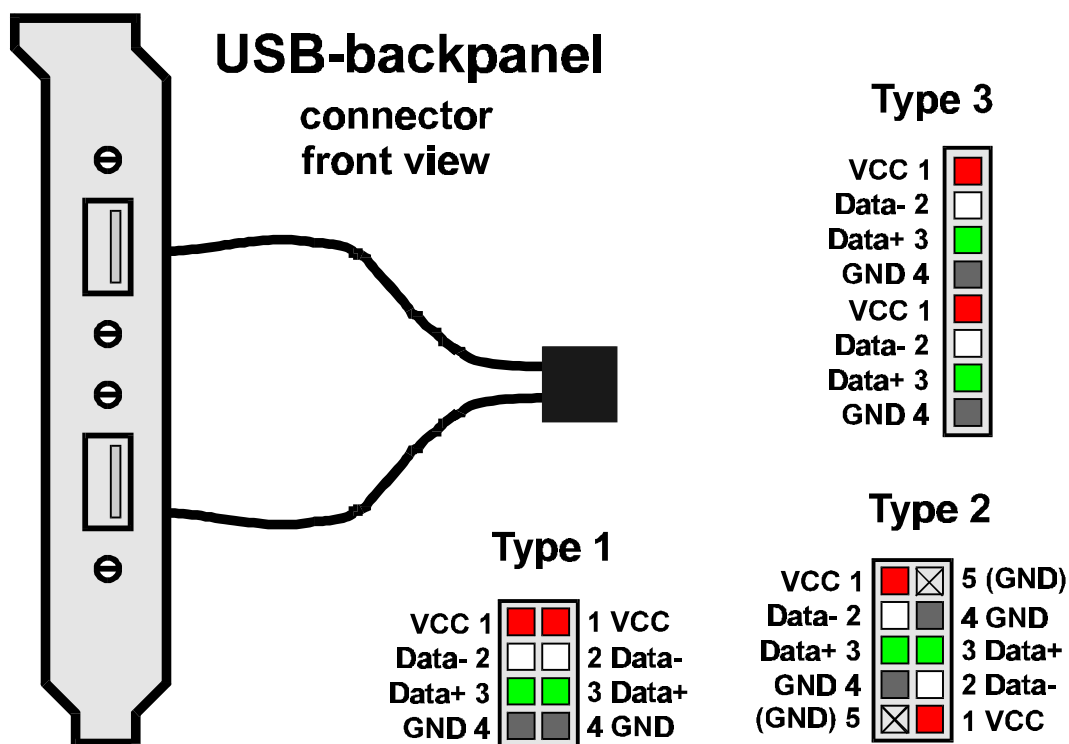
On all HOT-419-versions set Jumper 55 and 69 to "SETUP 2".

### **Cyrix 5x86 and AMD 5x86-P75**

These CPUs are only supported by the HOT-419-Mainboard with the Layout-Version R3 and Bios-Version 419AIP05.

## USB (Universal Serial Bus)

### connection with backpanel



Backpanel-adapter is necessary for many mainboards to make USB interface available for external devices. Type of connector must fit to the mainboard.

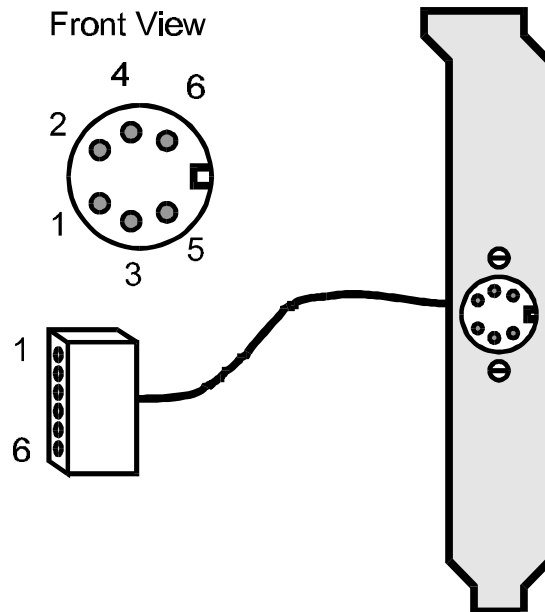
Type	Mainboards
1	HOT-553, HOT-555, HOT-557(V1.32 & V1.5), HOT-613, HOT-617
2	HOT-555A, HOT-565, HOT-623, HOT-559(V1.6)
3	HOT-559 (V1.3 & V1.5)

Pin	Description	Color
1	VCC	Red
2	Data -	White
3	Data +	Green
4	Ground	Black

## PS/2-Mouse Connector

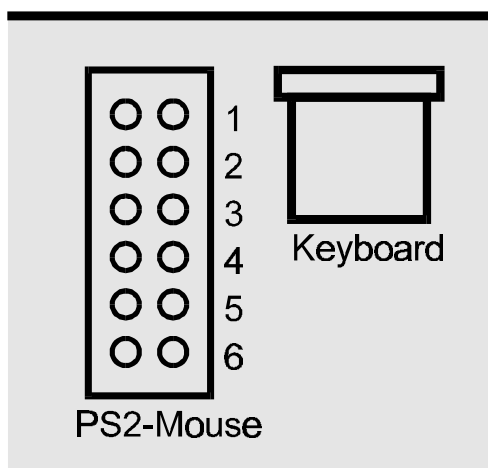
**(HOT-541, HOT-553, HOT-555, HOT-557)**

PS/2-Mouse Connector	
Pin	Function
1	Data
2	-/-
3	Ground
4	VCC
5	Clock
6	-/-
This table has been shown wrong in some manuals.	

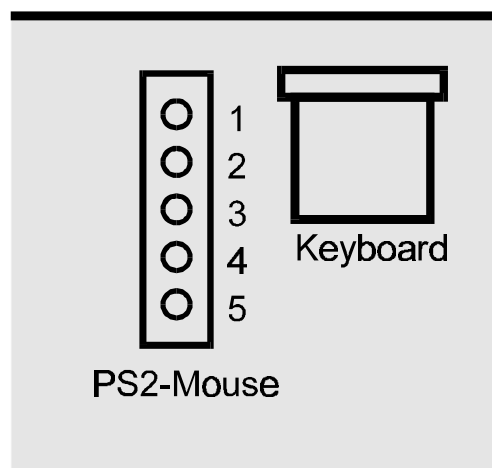


In order to use a PS/2-Mouse, the "PS/2 mouse function control" in the "BIOS FEATURES SETUP" has to be "Enabled". This will occupy IRQ 12. Pins 2 and 6 of the PS/2-Mouse Connector have no function.

**HOT-541 / HOT-553**



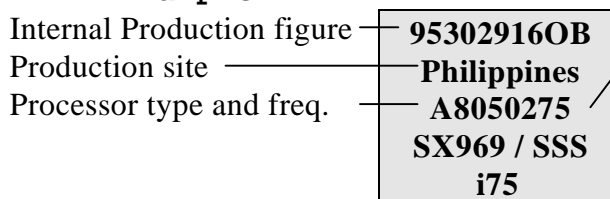
**HOT-555 / HOT-557**



## CPU: Intel Pentium P54C

### Intel Pentium Codes

#### **Example**



Production figure —  
Embossed Lid (i75 = 75 MHz, iPP = others)

1. Voltage  
S = Standard (3,135-3,6V)  
V = VRE (3,4-3,6V)
2. Timing Specification  
S = Standard, M = Min. valid delay spec
3. Multi-Processing-Support  
S = suitable for Dual-/Multi-/Uni-Proc.  
U = not suitable for Dual-Processing

**Tip:** If you don't know if the voltage is "Standard" or "VRE", set it 3,45 Volt.

<b>Power Consumption</b> (Source: c't 4/96)			
<b>Processor</b>	<b>DOS</b>	<b>HALT</b>	<b>max. Power</b>
Intel Pentium 120 MHz	1,73 A	0,23 A	10,1 W
Intel Pentium 133 MHz	2,26 A	0,30 A	11,2 W
Intel Pentium 166 MHz	2,59 A	0,34 A	14,5 W

## CPU: Intel Pentium with MMX

- Name: "Pentium with MMX-Technology", Codename "P55C"  
(normal Pentium-Processors have the Codename "P54C")
- MMX (MultiMedia eXtension) are features that enhance the system's graphics and sound capabilities.
- Dual Voltage (Vcore = 2,8V, Vio = 3,3V)

Current/Voltage/Consump.	P55C-166	P55C-200	P55C-233
Core-Voltage Vcore	2,8V (max. 4,75A)	2,8V (max. 5,7A)	2,8V (max. 6,65A)
Input-/Output Vio	3,3V (max. 0,45A)	3,3V (max. 0,65A)	3,3V (max. 0,75A)
Consumption Pmax / Ptyp	17,2W / 10,3W	20W / 12W	28,3W / 17W

(from: c't 5/97/156)

## CPU: AMD K6

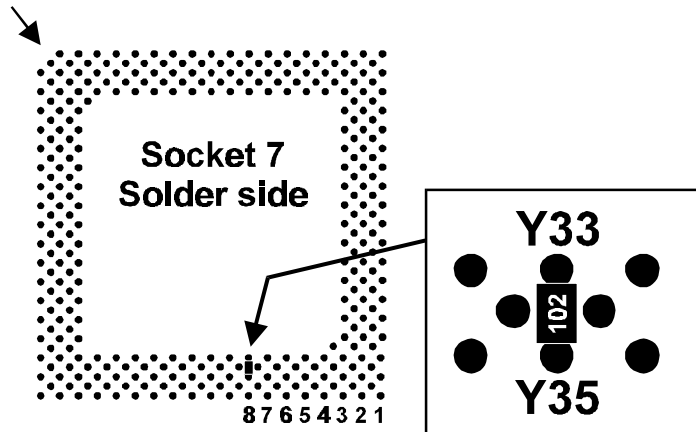
- supports Multimedia Extensions
- Dual Voltage (Vcore = 2,8V, Vio = 3,3V)
- Label: e.g. AMD-K6/PR2-200
- "PR2" stands for "Performance Rating 2", find out with Ziff-Davis-Benchmark Winstone 97. "PR2-200" stands for same or more performance under Windows 95 or NT than Pentium Pro Processor with 200 MHz internal clock speed.

Current/Voltage/Consump.	K6-166	K6-200	K6-233
Core-Voltage Vcore	2,9V (max. 6,25A)	2,9V (max. 7,5A)	3,2V (max. 9,5A)
Input-/Output Vio	3,3V (max. 0,48A)	3,3V (max. 0,5A)	3,3V (max. 0,52A)
Consumption Pmax / Ptyp	13,1W / 6,1W	15,7W / 7,3W	18,3W / 8,5W

(from: c't 5/97/156)

## **If Intel Pentium Processor MMX P55C clock speed can't be configured higher than 166 MHz...**

Intels Pentium Prozessor with MMX - it's codename is P55C. Clock speed must be configured like the older P54C (without MMX). For the 200 MHz Version the Clock-Multiplier is 3, but Intel changed the location of the BF1-Pin, which is responsible for this. In fact older mainboards **HOT-541, HOT-553, HOT-555, HOT-557 and HOT-559** may run at 166 MHz although the jumper-setting is 200 MHz. In order to solve this problem customer can



modify the mainboard by adding/solder **SMD-resistor of 1 k $\Omega$**  to the location as descipted above. This should be done by a technician. This is on your own risc, **the author or manufacturer do not accept any liability when system have been damaged after this modification**

**Note: For Cyrix/IBM 6x86/L CPUs an additional jumper must be set after this modification (this differ from older manuals)**

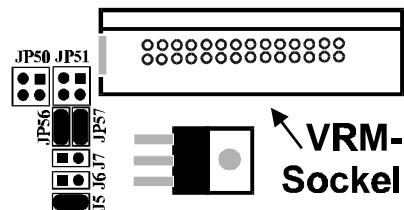
HOT-541	close Jumper 3
HOT-553	close Jumper 3
HOT-555 Version 1.4x	close Jumper 23
HOT-555 Version 1.5x	SW1: close Pin 7-8
HOT-557 Version 1.32	close Jumper 23

## **HOT-555, HOT-557 and HOT-559 (Bios-Update >= 55XWUQ07)**

CPU-voltage must set to dual voltage: Vio = 3,3V and Vcore = 2,8V.

## **HOT-553 (Bios-Update >= 553WUQ07)**

The onboard regulator allow to support single voltage CPUs only. For dual voltage support an additional voltage regulator module is necessary: HOT-106 (or HOT-105.1). For Bios-Update please read notes about restrictions in README.TXT, which is normally enclosed with bios-update.



## CPU: Cyrix/IBM 6x86 (1)

### The Cyrix/IBM 6x86 gets "hot"

The Cyrix-6x86-CPU has a very high power-consumption, which leads to the fact that a VRM and good cooler is needed. If you use the Cyrix 6x86**P150+** or **P166+** on the **HOT-541** and **HOT-553** you need an external VRM that has to be activated by a Jumper. This is not necessary for the Cyrix 6x86 **P120+**, **HOT-555** and **HOT-557** do not need an external VRM-module.

<b>Power Consumption</b> (Source: c't 4/96)			
<b>Processor</b>	<b>DOS</b>	<b>HALT</b>	<b>max. Power</b>
Intel Pentium 120 MHz	1,73 A	0,23 A	10,1 W
Intel Pentium 133 MHz	2,26 A	0,30 A	11,2 W
Intel Pentium 166 MHz	2,59 A	0,34 A	14,5 W
Cyrix 6x86 P120+ (100 MHz)	4,76 A	3,66 / 0,02 A	22 W
Cyrix 6x86 P150+ (120 MHz)	5,37 A	3,97 / 0,03 A	25 W
Cyrix 6x86 P166+ (133 MHz)	5,56 A	4,31 / 0,03 A	27 W

### Incompatibilities with the Cyrix 6x86

All software should work with the Cyrix 6x86 CPU. In some cases there are some differences Intel Pentium CPU:

- no boot with Elsa Winner 1000 Trio/V Bios Version 1.23.00  
Solution: Update the Bios of the Graphics card.
- Problems with Clipper-programs.  
Solution: Software "PIPELOOP.EXE" (Shuttle-Mailbox)

### Revision of the 6x86-Mask

(source c't 12/96, page 12)

The mask-revision of the Cyrix is printed on the back-side of the CPU. The core of the IBM and Cyrix are the same, only the cover is different. The CPU revision can be detected by the CPUID-command.

<b>Revisions of the 6x86 CPU</b>		
<b>Revision of Mask</b>	<b>Cyrix</b>	<b>CPUID Rev (ctcm)</b>
2.4	G8x <b>36</b> ...	14h
2.5	G8x <b>46</b> ...	15h
2.6	G8x <b>56</b> ...	16h
2.7	G8x <b>66</b> ...	17h

Shuttle has not detected any compatibility problems with any mask-revisions and Spacewalker mainboards.

## **CPU: Cyrix/IBM 6x86 (2)**

### **Cyrix/IBM 6x86 P200+**

Cyrix/IBM 6x86 P200+ CPU runs with 75 MHz system clock and 150 MHz internal. Intels Chipsets 430FX/HX/VX/TX are specified for maximum systemclock of 66 MHz. When systemclock of mainboards with this chipset is configured to more than 66 MHz it runs beyond the spec. Nevertheless many Spacewalker Mainboards allow to set system clock to 75 MHz. The manufacturer do not accept any liability when system doesn't run flawless at 75 MHz, because PCI-/ISA-Bus, Memory, IDE-Kontroller and Chipset are overclocked. EDO RAM is recommended.

### **Configuration of Cyrix/IBM 6x86 P200+** (pay attention to the note above)

<b>Mainboard</b>	<b>system clock 75 MHz</b>	<b>Multiplier 2:1</b>
<b>HOT-541/553</b>	not possible	
<b>HOT-555 V1.5x</b>	SW1: 3-4 closed and...	... SW1: 7-8 closed
<b>HOT-557 V1.32</b>	JP36: 1-2 closed	JP23 closed
<b>HOT-557 V1.5</b>	JP36: 1-2 closed	JP23: 1-2 closed
<b>HOT-555A</b>	JP37: 3-4 closed	JPA: 1-2 closed
<b>HOT-565</b>	JP36: 1-2 closed	JP23 closed

### **Cyrix-6x86(L)-CPU Codes**

#### **Example Cyrix 6x86: 6x86 = Single Voltage**

**6x86-P166+ GP**  
**133 MHz**  
**3.52V (028)**

Name: 6x86  
P-Rating: 90+ 120+ 133+ 150+166+ 200+  
Internal frequency: 100, 110, 120,133, 150  
Voltage: 3,3 3,52 2,5 2,7 Volt  
Voltage:  
Total area: 3,15 - 3,70 Volt  
Code (016): 3,15 - 3,45 Volt  
Code (028): 3,40 - 3,70 Volt

#### **Example Cyrix 6x86L 6x86L = Dual Voltage**

**6x86L-P166+ GP**  
**133 MHz**  
**2.8V**

Name: 6x86L (Vio=3,3V / Vcore=2,8V)  
P-Rating: 166+ 200+  
Internal frequency: 133, 150 MHz  
Voltage Vcore (CPU-Core) =2,8V  
Voltage Vio = 3,3V

## **CPU: AMD K5**

AMD-CPU CODE:

**AMD-K5-PR100ABQxx**

"B" means Voltage: 3,52 V, Frame: 3,45-3,6 V

### **STABILITY OF AMD-K5-CPU**

Using an AMD-K5-CPU with 3,52V Voltage should be set to **3,6V** on Spacewalker mainboards. Moreover you should use a very good cooling-fan.

### **PR133 is jumpered like a PR100 CPU**

A CPU labled "...K5-PR133..." works with 100 MHz internal clock frequency (System clock = 66 MHz), but has a P-rating of 133. This means: the performance equals the Intel Pentium 133 CPU. "Winstone" is the program used to determine the P-rating.

### **PR150 and PR166 work with a Clock/Ratio of 1/1,75**

CPU-Typ (P-Rating)	Frequence		Clock/Ratio
	extern	intern	
PR200	66 MHz	133 MHz	1 : 2+
PR166	66 MHz	116,7 MHz	1 : 1,75
PR150	60 MHz	105 MHz	1 : 1,75
PR133	66 MHz	100 MHz	1 : 1,5
PR120	60 MHz	90 MHz	1 : 1,5
PR100	66 MHz	100 MHz	1 : 1,5
PR90	60 MHz	90 MHz	1 : 1,5
PR75	50 MHz	75 MHz	1 : 1,5

## 486r CPUs general Info

### Voltage

Many CPUs are frequently labeled "3V", but the real voltage differs depending on the CPU: Most AMD-CPU's are set to 3,45V, Intel-CPU's to 3,3V and Cyrix CPU's to 3,45V.

## CPU: Cyrix 5x86

### Incompatibility with Cyrix 5x86

All software should run on the Cyrix 5x86. In some cases there might be some problems:

- Matsushita / Panasonic CR-581 Quadspeed ATAPI-CDROM drive's DOS-driver "CR\_ATAPI.SYS" alerts "Division by 0"-  
Solution: Use driver version 5.17V for the CDROM

## CPU: Cyrix 486 DX4

### "OP4" or "GP4"

In case your CPU doesn't work, check if it is labeled "OP4" or "GP4". In this case try the setting for AMD 486 DX4 (non-S-series, N8T).

## CPU: AMD 486 DX4

### Two Types

Two existing Types of AMD DX4 CPU's:

- Label **N8T**, **NV8T**: Non-S-Series, internal Cache: Write Trough (WT)
- Label **SV8B** ("Enhanced"): S-Series, internal Cache: Write Back (WB)

The "Enhanced"-AMD features the fast WB-mode. If this CPU is not mentioned in the board's manual, try the setting for Intel P24D.

## CPU: IBM 486

## CPU: SGS Thomsen (ST) 486

should be configured like Cyrix CPU's

## Memory Modules

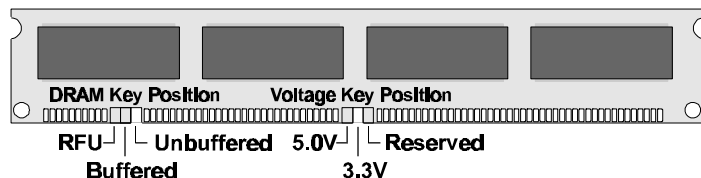
(more infos in "Tom's Hardware & Performance Guide")

### SIMMs and DIMMs

The names SIMM and DIMM only specifies the package RAM comes in, not the type! You can get each RAM type (FPM, EDO, SDRAM,...) for each module, but as far as PCs are concerned, DIMMs are at present only used for SDRAM.

**SIMM** (Single In line Memory Module) have 72 Pins and data path width of 32 Bit (36 Bit using Parity-Modules). On Pentium-Mainboards two SIMMs of the same kind and capacity have to be used to fill a bank. Some chipsets (for exp. SIS) allow to use only one module which results in a high performance loss.

**DIMM** (Dual In line Memory Module) have 168 Pins. The data path width is 64 Bit (72 Bit using Parity-Modules). For this reason you can use a single DIMM to fill a bank on a Pentium-Board. Modules must be 3.3V Unbuffered SDRAM or EDO (you can identify type as shown by the illustration above).



### Types of memory

**Fast Page Mode (FPM)** are standard memory modules. Actually VRAM or Video RAM is nothing much different, it only is so called dual ported, which means it can be accessed by the RAMDAC independently of the CPU accesses via the second port, so that the RAMDAC doesn't have to wait for the CPU access to finish. FPM DRAMs for mainboards comes in two different flavors nowadays: 60ns and 70ns access time. On 66 MHz system-clock you should use 60ns modules, however, 70ns work in most cases as well. "Fast Page Mode" means that the module assumes that the next access is in the same memory area (ROW) to speed up the operation. The fastest access in CPU-Cycles is 5-3-3-3 for a data burst of 4 (Byte / Word / Dword).

**Extended Data Output RAM (EDO RAM)** The major difference is the timing of the CAS#-Signal and Data output using a latch. This speeds up sequential read-operations. The fastest access in CPU-Cycles is 5-2-2-2.

**Burst Extended Data Output RAM (BEDO RAM)** In opposition to EDO data latch on BEDO is replaced by a register (i.e. an additional latch stage is added) data will not reach the outputs as a result of the first CAS cycle. The benefit of this internal pipeline stage is that data will appear in a shorter time from the activating CAS edge in the second cycle (i.e. tcas is shorter). The second difference is that BEDO devices include an internal address counter so that only the initial address in a burst of four needs to be provided externally. The fastest access in CPU-Cycles is 5-1-1-1.

**Synchronous Dynamic RAM (SDRAM)** As the name says already, this RAM is able to handle all input and output signals synchronized to the system clock - that is something a short while ago only Static Cache RAM was able to achieve. System clock can be higher than 66Mhz. The fastest access in CPU-Cycles is 5-1-1-1.

## **Bios-Update & Flash-EPROM (1)**

A Bios-Update is always a risk for the user and should only be done if there is a specific reason for it. We do not accept any liability for damage caused by a Bios update.

### **Check the following things:**

- The mainboard needs Flash-EPROM (without window under the licence-label)
- The programming voltage needs to be set correctly on the mainboard (5 or 12V as listed next page).
- Flash utility can't work under protected/virtual mode. Memory manager like QUEMM.386 or EMM386 should not be loaded. Simply boot up DOS and bypass all CONFIG.SYS and AUTOEXEC.BAT.
- The binary-Bios file has to be extracted (not packed with pkzip, arc or other tools). Normally filesize is 131072 Byte (1 Mbit).
- Enter the name of the programming tool followed by the name of the binary-file at the DOS-Prompt. For example: AFLH52B 55XWUQ07.BIN <ENTER>
- Bios-Update-Utility and Bios-Version which now is running on the mainboard must be from the same source. For example you want change from AMI to AWARD, then you must take an AMI-tool, because AMI is running on the mainboard.
- Only use BIOS versions and respective programming tools validated by the mainboard manufacturer.

## Bios-Update & Flash-EPROM (2)

**Flash- and EEPROM-Types (c't 2/97/110)**

<b>Manu- facturer</b>	<b>5 Volt</b>	<b>12 Volt</b>
<b>AMD</b>	Am29F010	Am28F010, Am28F010A
<b>Atmel</b>	AT28C010, AT28MC010, AT29C010, AT29LC010, AT29MC010	
<b>Catalyst</b>	CAT28F010V5, CAT28F010V5I	CAT28F010, CAT28F010I
<b>Fujitsu</b>		28F010
<b>Hitachi</b>	HN58C1000	HN28F010, HN29C010, HN29C010B, HN58C1001, HN58V1001
<b>Intel</b>		A28F010, 28F001BX-B, 28F001BX-T, 28F010
<b>ISSI</b>		28F010
<b>Mitsubishi</b>		M5M28F101FP, M5M28F101P, M5M28F101RV, M5M28F101VP
<b>MXIC</b>		MX28F1000
<b>Oki</b>		MSM28F101
<b>Samsung</b>	KM29C010	
<b>SEEQ</b>	DQ28C010, DYM28C010, DQM28C010A	DQ47F010, DQ48F010
<b>SGS- Thomson</b>		M28F010, M28F1001
<b>SST</b>	28EE011, 29EE010	
<b>Texas- Instr.</b>	TMS29F010	TMS28F010
<b>Winbond</b>	W29EE011	W27F010
<b>XICOR</b>	X28C010, X28C010I, XM28C010, XM28C010I	

## HOT-541 / 553 / 555 / 557 / ...

### **Postcodes AWARD V4.50 (1)**

During the system boot the system does a Power-On-Self-Test (POST). A special 8-Bit-ISA-card can be used to make the codes produced by the system-check visible.

AWARD Software Europe  
Elsenheimerstr. 50; D-80687 Muenchen (GERMANY)  
Tel: 089 / 57 57 50 Fax: 089 / 57 59 98

AWARD POST Codes for BIOS V4.20 and V4.50  
Der Text unter "DESCRIPTION" basiert auf der von AWARD Software Europe freundlicherweise zur Verfügung gestellte Beschreibung der durchgeführten Tests (POST procedures). Bitte beachten Sie, da die Auflistung der Codes hier nicht (!) in numerischer Reihenfolge erfolgt, sondern dem Ablauf der Routinen während des POST entspricht. Codes in runden Klammern sind zum Teil OEM-spezifisch oder nur in einer Version 4.20 bzw. 4.50 verfügbar.

POSTcode / NAME	DESCRIPTION
00 (C0) Reserved Turn Off Chipset Cache	- OEM specific cache control.
01 Processor Test 1	Processor Status (IFLAGS) verification. Tests the following processor status flags: carry, zero, sign, overflow. The BIOS will set each of these flags, verify they are set, then turn each flag off and verify it is off.
(CA) Processor test 1 (very early init)	Processor test 1 (s. a.) for fast boot.
02 Processor Test 2	Test processor registers, Read/Write/ Verify all CPU registers except SS, SP and BP with data pattern FF and 00.
03 Initialize Chips	Disable NMI, PIE, AIE, UIE, SQWV. Disable video, parity checking, DMA. Reset math coprocessor. Clear all page registers, CMOS shutdown byte. Initialize timer 0, 1 and 2; including set EISA timer to a known state. Initialize DMA controllers 0 and 1. Initialize interrupt controllers 0 and 1. Initialize EISA extended registers.
04 Test Memory Refresh Toggle	RAM must be periodically refreshed in order to keep the memory from decaying. This function assures (by testing Port 0x61 Bit 4) that the memory refresh is working properly.
05 Blank video Inititalize keyboard	Keyboard controller initialization.
(06) EPROM Checksum (or reserved)	Checksum BIOS EPROM, sign-on-message, evaluation-message and F000:E000 to F000:FFFF area.
07 Test CMOS Interface and Battery Status	Verifies CMOS is working correctly, detects bad battery. Detects if CMOS override key (INSERT) is pressed.

## HOT-541 / 553 / 555 / 557 / ...

### Postcodes AWARD V4.50 (2)

BE	Chipset Default Initialization	Program chipset registers with power on BIOS defaults.
(C1)	Memory presence test	OEM specific Test to size onboard memory.
(C5)	Early Shadow	OEM specific shadow enable for fast boot.
(C6)	Cache presence test	External cache size detection.
08	Setup low memory	Early chipset initialization (Code C2). Memory presence test. OEM chipset routines. Clear low 64K of memory. Test first 64K memory. (Cyrix CPU initialization,) Cache initialization.
09	Early Cache Initialization	Initialize first 120 interrupt vectors with SPURIOS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL.
0A	Setup Interrupt Vector Table	Test CMOS checksum, if bad or INSERT-key is pressed, load defaults.
0B	Test CMOS RAM Checksum	Detect type of keyboard controller (optional). Set NUM_LOCK status.
0C	Initialize Keyboard	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Initialize video adapter.
0D	Initialize Video Interface	Test video memory, write sign-on message to screen, setup screen for POST messages. Setup shadow RAM (enable shadow according to setup).
0E	Test Video Memory	BIOS checksum test. Keyboard detect and initialization.
0F	Test DMA contr. #0	-
10	Test DMA contr. #1	Test DMA Page registers.
11	Test DMA Page reg.	-
12-13	Reserved	-
14	Test Timer Ctr. 2	Test 8254 Timer 0 Counter 2.
15	Test 8259-1 Mask Bits.	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupts lines.
16	Test 8259-2 Mask Bits.	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupts lines.
17	Test Stuck 8259's Interrupt Bits	Turn off interrupts, then verify no interrupt mask register is on.
18	Test 8259 Interrupt Functionality	Force an interrupt and verify that the interrupt occurred.
19	Test Stuck NMI Bits (Parity/IO Check)	Verify NMI can be cleared.
1A	Display CPU clock (Reserved in V2.00)	-
1B-1E	Reserved	-
1F	Set EISA Mode	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests and clear EISA mode flag. Test EISA Configuration Memory Integrity (checksum & communication interface). Initialize slot 0 (System Board).
20	Enable Slot #0 (EISA)	Initialize slots 1 through 15.
21-2F	Enable Slots #1 - 15 (EISA).	
30	Size Base and Extended Memory	Size base memory from 256K to 640K and Extended Memory above 1MB.

## HOT-541 / 553 / 555 / 557 / ...

### **Postcodes AWARD V4.50 (3)**

31	Test Base and Extended Memory	Test base memory from 256K to 640K and Extended Memory above 1MB using various Patterns.  ! NOTE: This will be skipped in EISA mode and can be "skipped" with ESC key in ISA mode.
32	Test EISA Extended Memory (EISA)	If EISA mode flag is set then test EISA memory found during slots initialization.  ! NOTE: This will be skipped in EISA mode and can be "skipped" with ESC key in ISA mode.
(33)	IDE auto detect (Reserved in V4.50)	OEM-specific detection of IDE parameters .
34-3B	Reserved.	
3C	Setup enabled.	Enable to enter setup (show message on screen).
3D	Initialize & Install Mouse	Detect if mouse (PS/2) is present, initialize mouse and install interrupt vectors. (V4.20: OEM specific.)
3E	Setup Cache Controller	Initialize cache controller. If enabled in setup, enable cache (internal & external).
3F	Setup Shadow RAM. (Reserved in V4.50)	Enable shadow according to setup.
40	Reserved.	-
BF	Chipset Init.	Program chipset registers with setup values.
41	Initialize Floppy drive & controller	Initialize floppy disk drive controller and any drives.
42	Init. Hard disk drive & controller	Initialize hard disk drive controller and any drives.
43	Detect & Init. Ser./Par. Ports	Initialize any serial and parallel ports (also game port).
44	Reserved	-
45	Detect & Init. Math Coprocessor	Initialize math coprocessor.
46	Reserved.	
47	Set speed for boot (reserved in V4.50)	Chipset dependent speed switching routine (V4.20 only, Code C8).
48-4D	Reserved.	
4E	Manufact. POST Loop or Disp. Messages.	Reboot if manufacturing post loop pin (or Keyboard controller bit P15) is set Otherwise display any messages (i. e. any non-fatal errors that were detected during POST) and enter setup.
4F	Security Check	Ask password security (optional).
50	Write CMOS	Write all CMOS values back to RAM, recalculate checksum and clear screen.
51	Pre-boot Enable	Enable parity checker. Enable NMI. Enable cache before boot.
52	Initialize Option ROMs	Initialize any option ROMs present from 0xC8000h to 0xEFFFFh.  ! NOTE: When FSCAN option is enabled, this step will initialize ROMs to 0xF7FFFh.
53	Initialize Time Value	Initialize time value in 40h: BIOS area.
54-5F	Reserved	-
60	Setup Virus Protect	Setup virus protect according to setup (optional).
61	Set Boot Speed	Set system speed for boot.
62	Setup NumLock	Setup NumLock status according to setup.
63	Boot Attempt	Set low stack. Boot via INT 19h.
(D0-DF)	Debug	Available POST codes for use by source code customers during development.



## Questions & Answers (Support info)

# HOT-541 / 553 / 555 / 557 / ...

### Postcodes AWARD V4.50 (4)

B0	Spurious Int.	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display message "Press F1 to disable NMI, F2 reboot"
E0	Reserved	-
E1-EF	Setup pages	(E1 = Page 1, E2 = Page 2, ...).
FF	Boot	-



## Questions & Answers (Support info)

# HOT-419 / 433 / 539

### Postcodes AMI (I)

During the system boot the system does a Power-On-Self-Test (POST). A special 8-Bit-ISA-card can be used to make the codes produced by the system-check visible.

AMI-BIOS CHECK-POINT, (C)1991 American Megatrends Inc., All Rights Reserved  
1346 Oakbrook Dr. #120. GA-30093. Phone:(404)-263-8181, Fax:(404)-263-9381  
Checkpoint codes for AMI WinBios

POSTcode / TEST-DESCRIPTION

- 01 Processor register test about to start,  
and NMI to be disabled.
- 02 NMI is Disabled.  
Power on delay starting.
- 03 Power on delay complete.  
To check soft reset/power-on.
- 05 Soft reset/power-on determined.  
Going to enable ROM. i.e. disable shadow RAM, Cache if any.
- 06 ROM is enabled. Calculating ROM BIOS checksum.
- 07 ROM BIOS checksum passed.  
CMOS shutdown register test to be done next.
- 08 CMOS shutdown register test done. CMOS checksum calculation  
to be done next.
- 09 CMOS checksum calculation is done, CMOS Diag byte written.  
CMOS init. to begin (If "INIT CMOS IN EVERY BOOT IS SET").
- 0A CMOS initialization done (if any).  
CMOS status register about to init for Date and Time.
- 0B CMOS status register init done.  
Any initialization before keyboard BAT to be done next.
- 0C KB controller I/B free.  
Going to issue the BAT command to keyboard controller.
- 0D BAT command to keyboard controller is issued.  
Going to verify the BAT command.
- 0E Keyboard controller BAT result verified.  
Any initialization after KB controller BAT to be done next.
- 0F Initialization after KB controller BAT done.  
Keyboard command byte to be written next.
- 10 Keyboard controller command byte is written.  
Going to issue Pin-23,24 blocking/unblocking command.
- 11 Pin-23,24 of keyboard controller is blocked/ unblocked.  
Going to check pressing of <INS> key during power-on.
- 12 Checking for pressing of <INS> key during power-on done.  
Going to disable DMA and Interrupt controllers.
- 13 DMA controller #1,#2, interrupt controller #1,#2 disabled.  
Video display is disabled and port-B is initialized.  
Chipset init/ auto memory detection about to begin.
- 14 Chipset initialization/ auto memory detection over.  
To uncompress the POST code if compressed BIOS.
- 15 POST code is uncompressed.  
8254 timer test about to start.
- 19 8254 timer test over.  
About to start memory refresh test.
- 1A Memory Refresh line is toggling.  
Going to check 15 micro second ON/OFF time.

## **HOT-419 / 433 / 539**

### **Postcodes AMI (2)**

- 20 Memory Refresh period 30 micro second test complete.  
Base 64K memory/address line test about to start.
- 21 Address line test passed.  
Going to do toggle parity.
- 22 Toggle parity over.  
Going for sequential data R/W test on base 64k memory.
- 23 Base 64k sequential data R/W test passed.  
Going to set BIOS stack and to do any setup before Interrupt vector init.
- 24 Setup required before vector initialization complete.  
Interrupt vector initialization about to begin.
- 25 Interrupt vector initialization done.  
Going to read Input port of 9042 for turbo switch (if any) and to clear password if post diag switch is on.
- 26 Input port of 8042 is read.  
Going to initialize global data for turbo switch.
- 27 Global data initialization for turbo switch is over.  
Any initialization before setting video mode to be done next.
- 28 Initialization before setting video mode is complete.  
Going for monochrome mode and color mode setting.
- 2A Monochrome and color mode setting is done.  
About to go for toggle parity before optional rom test.
- 2B Toggle parity over. About to give control for any setup required before optional video ROM check.
- 2C Processing before video ROM control is done.  
About to look for optional video ROM and give control.
- 2D Optional video ROM control is done. About to give control to do any processing after video ROM returns control.
- 2E Return from processing after the video ROM control.  
If EGA/VGA not found then do display memory R/W test.
- 2F EGA/VGA not found.  
Display memory R/W test about to begin.
- 30 Display memory R/W test passed.  
About to look for the retrace checking.
- 31 Display memory R/W test or retrace checking failed.  
About to do alternate Display memory R/W test
- 32 Alternate Display memory R/W test passed.  
About to look for the alternate display retrace checking.
- 34 Video display checking over.  
Display mode to be set next.
- 37 Display mode set.  
Going to display the power on message.
- 39 New cursor position read and saved.  
Going to display the Hit <DEL> message.
- 3B Hit <DEL> message displayed.  
Virtual mode memory test about to start.
- 40 Going to prepare the descriptor tables.
- 42 Descriptor tables prepared.  
Going to enter in virtual mode for memory test.
- 43 Entered in the virtual mode.  
Going to enable interrupts for diagnostics mode.
- 44 Interrupts enabled (if diagnostics switch is on).  
Going to initialize data to check memory wrap around at 0:0.
- 45 Data initialized. Going to check for memory wrap around at 0:0 and finding the total system memory size.
- 46 Memory wrap around test done. Memory size calculation over.  
About to go for writing patterns to test memory.
- 47 Pattern to be tested written in extended memory.  
Going to write patterns in base 640k memory.
- 48 Patterns written in base memory.  
Going to findout amount of memory below 1M memory.

## HOT-419 / 433 / 539

### Postcodes AMI (3)

- 49 Amount of memory below 1M found and verified.  
Going to findout amount of memory above 1M memory.
- 4B Amount of memory above 1M found and verified.  
Check for soft reset and going to clear memory below 1M for  
soft reset. (If power on, go to check point# 4Eh).
- 4C Memory below 1M cleared. (SOFT RESET)  
Going to clear memory above 1M.
- 4D Memory above 1M cleared. (SOFT RESET)  
Going to save the memory size. (Goto check point# 52h).
- 4E Memory test started. (NOT SOFT RESET)  
About to display the first 64k memory size.
- 4F Memory size display started. This will be updated during  
memory test. Going for sequential and random memory test.
- 50 Memory testing/initilisation below 1M complete.  
Going to adjust displayed memory size for relocation/ shadow.
- 51 Memory size display adjusted due to relocation/ shadow.  
Memory test above 1M to follow.
- 52 Memory testing/initialisation above 1M complete.  
Going to save memory size information.
- 53 Memory size information is saved. CPU registers are saved.  
Going to enter in real mode.
- 54 Shutdown successfull, CPU in real mode. Going to disable  
gate A20 line.
- 57 A20 address line disable successful.  
Going to adjust memory size depending on relocation/shadow.
- 58 Memory size adjusted for relocation/shadow.  
Going to clear Hit <DEL> message.
- 59 Hit <DEL> message cleared. <WAIT...> message displayed.  
About to start DMA and interrupt controller test.
- 60 DMA page register test passed.  
About to go for DMA #1 base register test.
- 62 DMA #1 base register test passed.  
About to go for DMA #2 base register test.
- 65 DMA #2 base register test passed.  
About to program DMA unit 1 and 2.
- 66 DMA unit 1 and 2 programming over.  
About to initialize 8259 interrupt controller.
- 67 8259 initialization over.  
About to start keyboard test.
- 80 Keyboard test started. clearing output buffer, checking  
for stuck key, About to issue keyboard reset command.
- 81 Keyboard reset error/stuck key found. About to  
issue keyboard controller interface test command.
- 82 Keyboard controller interface test over.  
About to write command byte and init circular buffer.
- 83 Command byte written, Global data init done.  
About to check for lock-key.
- 84 Lock-key checking over.  
About to check for memory size mismatch with cmos.
- 85 Memory size check done. About to display soft error  
and check for password or bypass setup.
- 86 Password checked.  
About to do pogramming before setup.
- 87 Programming before setup complete.  
Going to uncompress SETUP code and execute cmos setup.
- 88 Returned from cmos setup program and screen is cleared.  
About to do programming after setup.
- 89 Programming after setup complete.  
Going to display power on screen message.
- 8B First screen message displayed. <WAIT...> message displayed.  
About to do Main and Video BIOS shadow.

## **HOT-419 / 433 / 539**

### **Postcodes AMI (4)**

- 8C Main and Video BIOS shadow successful.  
Setup options programming after cmos setup about to start.
- 8D Setup options are programmed, mouse check and init to be done next.
- 8E Mouse check and initialisation complete.  
Going for hard disk controller reset.
- 8F Hard disk controller reset done. Floppy setup to be done next.
- 91 Floppy setup complete. Hard disk setup to be done next.
- 94 Hard disk setup complete.  
Going to set base and extended memory size.
- 96 Memory size adjusted due to mouse support, hdisk type-47.  
Going to do any init before C800h optional ROM control
- 97 Any init before C800h optional ROM control is over.  
Optional ROM check and control will be done next.
- 98 Optional ROM control is done. About to give control to do any required processing after optional ROM returns control.
- 99 Any initialization required after optional ROM test over.  
Going to setup timer data area and printer base address.
- 9A Return after setting timer and printer base address.  
Going to set the RS-232 base address.
- 9B Returned after RS-232 base address.  
Going to do any initialization before Co-processor test.
- 9C Required initialization before co-processor is over.  
Going to initialize the coprocessor next.
- 9D Coprocessor initialized.  
Going to do any initialization after Co-processor test.
- 9E Initialization after co-processor test is complete.  
Going to check extd keyboard, keyboard ID and num-lock.
- 9F Extended keyboard check is done, ID flag set. Num-lock on/off.  
Keyboard ID command to be issued.
- A0 Keyboard ID command issued.  
Keyboard ID flag to be reset.
- A1 Keyboard ID flag reset.  
Cache memory test to follow.
- A2 Cache memory test over.  
Going to display any soft errors.
- A3 Soft error display complete.  
Going to set the keyboard typematic rate.
- A4 Keyboard typematic rate set.  
Going to program memory wait states.
- A5 Memory wait states programming over.  
Going to clear the screen and enable parity/NMI.
- A7 NMI and parity enabled. Going to do any initialization required before giving control to optional ROM at E000h.
- A8 Initialization before E000h ROM control over.  
E000h ROM to get control next.
- A9 Returned from E000h ROM control. Going to do any initialization required after E000h optional ROM control.
- AA Initialization after E000h optional ROM control is over.  
Going to display the system configuration.
- B0 System configuration is displayed.  
Going to uncompress SETUP code for hot-key setup.
- B1 Uncompressing of SETUP code is complete.  
Going to copy any code to specific area.
- 00 Copying of code to specific area done.  
Going to give control to INT 19h boot loader.

## HOT-135 / 137 / 139

### Trouble-Shooting / General Information

#### Windows 95 Driver for IGS160X-VGA-card Version 2.11

- **DirectDraw support**

- **If Windows 95 ignores the setting of the VGA card's refresh-rate.**

For example, the Refresh-Rate is set to 75 Hz. After several restarts the refresh-rate is only 60 Hz. Solution: Update the driver

- **If VESA-2.0 is not supported by your IGS-VGA card.**

You can solve this problem either by software or by a Bios-update.

- 1) Software-solution start the following program:

"VGA\_80c.com" (IGA 1680-chip) or "VGA\_82c.com" (IGA 1682-chip)

(Suggestion: Add the entry to your AUTOEXEC.BAT file)

- 2) Bios-Update of the VGA-Card

"1680\_111.bin" (IGA 1680-chip) or "1682\_110.bin" (IGA 1682-chip)

- **2 MB is faster than 1 MB**

2 MB DRAM memory on the VGA-card allows much faster performance than 1 MB. Two 256k x 16Bit Chips (= 1 MB) allow 32bit data transfer from the memory to the graphic processor. Four 256k x 16Bit Chips (= 2 MB) allow 64bit data transfer from the memory to the graphic processor. An upgrade to 4 MB (HOT-139) does not result in higher performance, but more colors and higher resolutions.

### Versions of the VGA-Card

Graphic Card	Graphic Memory	Graphic Memory
HOT-135	1 or 2 MB DRAM	IGS 1682
HOT-137	1 or 2 MB DRAM	IGS 1680
HOT-139	2 or 4 MB DRAM	IGS 1680 / IGS 1682

The graphic chip is designed by InteGraphic System (IGS).

Only the IGS 1682 supports Software-MPEG-Playback.

## HOT-135 / 137 / 139

### Feature Connector Pinout

Pin	
1	PIX0
2	GND
3	PIX1
4	GND
5	PIX2
6	GND
7	PIX3
8	NOVDAT*
9	PIX4
10	NOSYNC*
11	PIX5
12	NOPCLK*
13	PIX6

Pin	
14	NC
15	PIX7
16	GND
17	VCLK
18	GND
19	BLANK*
20	GND
21	HSOUT
22	GND
23	VSOUT
24	NC
25	GND
26	NC

## Soundcard, Overview

### Spacewalker-Sound System-Series (Shuttle Sound System)

Article	Name	Chip	Wavetable
<b>HOT-223</b>	Shuttle Sound System 48	OPTi 928	optional
<b>HOT-233</b>	Shuttle Sound System 48 plus	OPTi 929	optional
<b>HOT-239</b>	Shuttle Sound System 48 wave	OPTi 930	<b>onboard</b>
<b>HOT-235</b>	Spacewalker Sound System 3D	OPTi 930	optional
<b>HOT-237</b>	Spacewalker Sound System 3D wave	OPTi 930	<b>onboard</b>
<b>HOT-245</b>	Spacewalker Sound System PnP	OPTi 931	optional
<b>HOT-241</b>	Spacewalker Sound System 3D PnP	OPTi 931	optional

### Table of Contents

**What is Wave and Midi?**  
**Game- / Midiport**  
**CD-Audio-Connector**  
**Windows 95 Audio Mixer**  
**Windows 95 Driver Installation (not PnP)**

## HOT-245

### PnP-Soundcard (OPTi 931)

#### Description:

- Plug and Play sound card like **HOT-241** (Drivers are also the same)
- fully compatible to the following standards:  
Microsoft Plug and Play Standard, Sound Blaster, Sound Blaster Pro, Windows Sound System, MPU-401, Ad Lib
- OPTi FM Music Synthesizer (22 Voices, 52 Operators) with more base -volume
- Amplifier: 2 x 2 Watt
- 7-Channel mixer (5 Stereo, 2 Mono)
- 16-bit Stereo
- supports Dual DMA Channel for optimized Full Duplex Operation
- supports 16-bit Type F DMA Output
- Socket for MPU-401 Wave Table Synthesizer upgrade
- Connectors: MIDI- /Joystick, Speaker, Line In, Microphone

#### Problems with the Windows 95 Installation

refer to **HOT-241...**

**Other Topics...**

## **HOT-241**

### **PnP-Sound card (OPTi 931)** **Installing Windows 95 Drivers**

#### **Windows 95 is already installed**

Windows 95 autodetects the sound card while booting and ask for the driver disk. After a restart the sound card should be working.

#### **Windows 95 is being installed with the HOT-241-Soundcard in the system**

- 1) The installation programm will try to install the driver for a joystick, which will not be possible since the CD-ROM can not be accessed at this point. Skip this step.
- 2) The device manager will show the following devices:
  - Joystick with a yellow “!” to point out a failed installation.
  - In "Other Components" there will be more entries.
  - Some more components (for example ADLIB) might have been found.
- 3) To solve this problem remove all the entries from the device manager. After Windows 95 restarts the sound card will be found and the driver disk will be needed. After another restart the sound card should be ready to be used.

## HOT-241

### PnP-Sound card (OPTi 931) Sound card can not be detected...

Solution for this problem: install the newest driver version.  
The newer driver disk contains the file "241V202R.AD" which lists driver versions:

Driver Version LIST :

DOS/WINDOWS 3.1	Version 2.02R5
WINDOWS 95	Version 4.00.04
WINDOWS NT 3.51/4.0	Version 1.04

### Plug & Play

You need a Plug & Play compatible mainboard to use a Plug & Play sound card.

## **HOT-241**

### **HOT-241 and ATAPI-CDROM under DOS**

The HOT-241-sound card has a connector for an ATAPI-CDROM. In combination with an Enhanced IDE-controller there can be a total of 5 IDE-devices in the system. This is a sample DOS-Configuration with a Mitsumi FX-400 CDROM-Drive:

<b>ATAPI CDROM Mitsumi FX-400 4x on the IDE-Port of the Sound card:</b>	
<b>CONFIG.SYS</b>	<b>AUTOEXEC.BAT</b>
LASTDRIVE=Z ... DEVICE=[PATH]\CDSETUP.SYS /T:I /P:36e,168 /I:a DEVICE=[PATH]\MTMCDAI.SYS /D:MSCD000 /P:168,10	... SET BLASTER=A220 I5 D1 T4 SET SOUND16=C:\HOT241 PATH C:\OPTI931;%PATH% C:\OPTI930\sndinit /b [PATH]\MSCDEX /D:MSCD000

Port 168 with IRQ 9 or 10 is called „Channel 4“. This configuration only works with drivers that can control CD-ROMs by these resources. The Toshiba XM5522 6speed ATAPI CDROM Drive with driver Rev Do11V110:CDG 1.01 for example will not work as a fifth IDE-device in our test.

The "CDSETUP.SYS"-driver has the following parameters in the CONFIG.SYS file:

1. /T:I /P:36e,168 I:a - Port 168 and IRQ 10 are used!
2. /T:I /P:376,170 I:f - Port 170 and IRQ 15 are used!
3. /T:I /P:3ee,1e8 I:b - Port 1e8 and IRQ 11 are used!

<b>ATAPI CDROM Mitsumi FX-400 4x on the IDE-Port of the Mainboards</b>	
<b>CONFIG.SYS</b>	<b>AUTOEXEC.BAT</b>
LASTDRIVE=Z ... DEVICE=[PATH]\CDSETUP.SYS /T:X DEVICE=[PATH]\MTMCDAI.SYS /D:MSCD000	... SET BLASTER=A220 I5 D1 T4 SET SOUND16=C:\HOT241 PATH C:\OPTI931;%PATH% C:\OPTI930\sndinit /b [PATH]\MSCDEX /D:MSCD000

**Also in Windows 95** you can use an ATAPI-CDROM with the settings "Port 168, IRQ 10" on the HOT-241 sound card.

**Other Topics...**



Questions & Answers  
(Support info)

## **HOT-237**

This sound card features an onboard Wavetable-ROM. The other features are like  
**HOT-235...**

**Other Topics...**

## **HOT-235**

### **Description**

- 16-Bit Stereo-Soundcard
- compatible with Sound Blaster, Sound Blaster Pro, Windows Sound System, MPU-401, Ad Lib
- 3D-Effect
- CDROM-Interface: IDE (Atapi)
- Wave-Recording/Playback with up to 48 kHz sampling rate, 16 Bit stereo
- Yamaha OPL3 FM Synthesizer for up to 20 voice simultaneously
- Digital/Analog Mixer
- Amplifier: 2 x 2 Watt
- Connectors: MIDI-/Joystick-Interface, Speakers Out, Line In, Line Out, Microphone
- Connector for Wavetable-Adapter

**Other Topics...**



## Questions & Answers (Support info)

### HOT-239

- This sound card features an onboard Wavetable-ROM
- The sound chip is OPTi 82C930

Other features like **HOT-233...**

**Other Topics...**

## HOT-233

### Hardware-Installation

- Jumper 2 has to be closed if no OPL4-Adapter is installed.
- If you want to connect a CD-ROM to the soundcard, set jumper 1 to position 2-3.

### DOS-/Windows-Installation

- You need at least. 500 kB free DOS memory and you have to install the software from a floppy disk.
- CD-ROM = NONE, if no CD-ROM drive is connected to the sound card.
- GAME PORT = OFF, if another game port is already active.
- MPU-401-Interface = OFF, if no midi-device is connected to the midi-port.
- Windows-Sound-System preset is IRQ 11, which often leads to conflicts with VGA-cards or SCSI-controllers.
- Interrupt (IRQ) 7 is supposed to be used for LPT1, but the printer still should work if you use this IRQ for the Soundblaster, Windows Sound System or the MPU401-Interface.
- The root-directory for the sound card is: C:\SOUND16. Here you can find the program SNDINIT, which lets you change the configuration anytime.
- In the WINDOWS "Control Panel - Drivers" there will be the following entries: MIDI-Mapper, OPTi MAD16 Pro Audio Driver, OPTi MPU-401,Timer, [MCI] CD-Audio, [MCI] MIDI-Sequencer

## HOT-233

### CDROM-Installation unter DOS/Windows

The HOT-233 has an IDE-Interface for CD-ROMs. It uses IRQ 15 / Port #170, which are the same resources used by the 2<sup>nd</sup> IDE interface found on most mainboards. Therefore you should prefer to use the 2<sup>nd</sup> onboard IDE-channel instead of the soundcard.

If you want to use the soundcard as your CD-ROM controller, choose „other DIE“ from the CD-ROM drivers list.

### Example: Mitsumi Quadspeed FX-400 with Soundkarte HOT-233:

#### CONFIG.SYS

```
DEVICE=C:\SOUND16\CDSETUP.SYS /T:I /P:170 /I:X /D:MTMIDE01
LASTDRIVE=M
...
DEVICE=C:\MTM\MTMCDAI.SYS /D:MTMIDE01
...
```

#### AUTOEXEC.BAT

```
SET BLASTER=A220 I5 D1 T4
SET SOUND16=C:\SOUND16
C:\SOUND16\SNDINIT /B
C:\DOS\MSCDEX.EXE /D:MTMIDE01 /M:10
...
PATH %PATH%;C:\SOUND16
```

### Example: Panasonic/Matsushita CR-581B connected to the IDE-Interface of a Controller:

#### CONFIG.SYS

```
LASTDRIVE=Z
DEVICE=C:\SOUND16\CDSETUP.SYS / T:X
REM LASTDRIVE=M
...
DEVICE=C:\ATACR\CR_ATAPI.SYS.SYS /D:MSCD000 /Q
...
```

#### AUTOEXEC.BAT

```
SET BLASTER=A220 I5 D1 T4
SET SOUND16=C:\SOUND16
C:\SOUND16\SNDINIT /B
C:\DOS\MSCDEX.EXE /D:MSCD000 /M:15 /V
...
PATH %PATH%;C:\SOUND16
PATH=C:\ATACR;%PATH%
```

## HOT-233

### OPL4-Wavetable-Adapter Installation

This adapter is connected to the sound card by two connectors: a 2 x 13pin- and a 4pin-connector. You can only use it in the Windows-Sound-System (WSS) mode under Windows 3.1x. Read the following installation instructions:

- Turn off the system, attach the OPL4-Adapter, open Jumper 1
- start Windows and install the OPL4-driver:
- Main Group
- Control Pannel
- Drivers
- Add
- Not listed devices
- enter path
- Choose: Yamaha OPL4 Midi Synth
- Confirm: New Driver
- **Important: OPL4 Midi Synth Setup - No Interrupt!**
- Restart windows

Now there is an icon „OPL4 Synth“ in the „main group/ Control Panel“. Choose PCM-Synthesis-Type (default) for high-quality MIDI-sound.

In the „Main Group / Control Panel / Drivers / Yamaha OPL4 Midi Synth / Setup“ you can disable the IRQ (definitely necessary).



## Questions & Answers (Support info)

# HOT-223

### Windows 95?

There is no Windows 95 driver for the 82C928 OPTi chip.

### Soundblaster-Compatibility

In order to enhance the Soundblaster compatibility in the DOS mode there is a program you should add to your AUTOEXEC.BAT.

"SBPRO" for HOT-223 Sound cards with a Crystal-chip

"SPPRO2" for HOT-223 Sound cards with a Analog-Devices-chip

**Where to get**

**Other Topics...**

## What is Wave and Midi?

### **Wave-Files (Extension ".WAV")**

WAVE-Files are any sounds sampled and stored in a digital format. There are different settings which determine quality and size of the file:

- data width: 8 or 16 Bit
- sampling rate: for example 11025 / 22050 / 44100
- Mono or Stereo

In most cases wave-files are much bigger than midi-files. They can be edited and changed by various effects: echo, filters, pitch, speed,...

### **Midi-Files (Extension ".MID")**

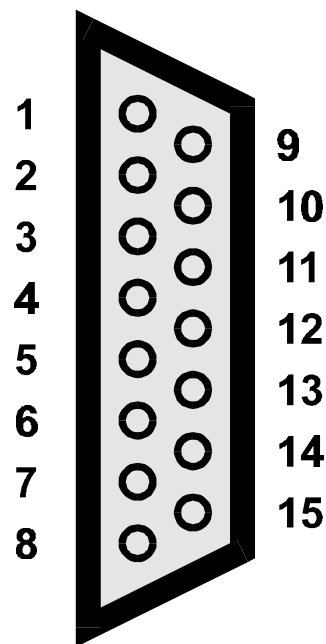
MIDI-files contain data to access virtual or physical instruments. Data for each used instrument are stored in a track. Midi programs let you compose complex songs and can use a great number of instruments. You can change notes, exchange instruments, mute tracks, edit and print score sheets. Moreover, Midi-files are very small.

**Other Topics...**

## Game-/Midiport

### Connector

PIN	Meaning
1	+ 5 Volt
2	F0
3	Joy 3
4	Ground
5	Ground
6	Joy 2
7	F1
8	+ 5 Volt
9	+ 5 Volt
10	F2
11	Joy 1
12	Txd
13	Joy 0
14	F3
15	Rxd

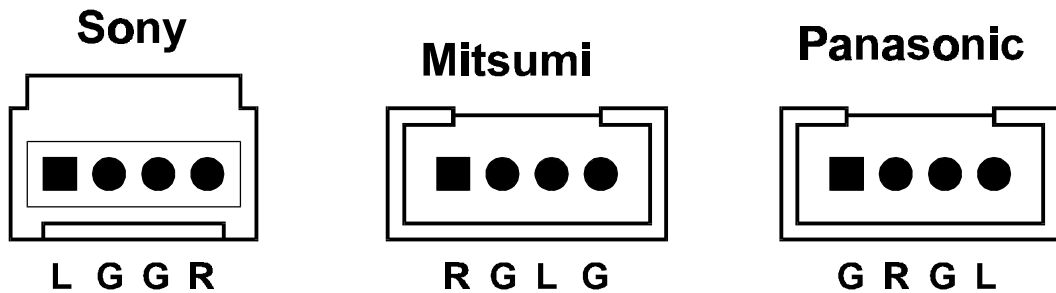


Shuttle- / Spacewalker Sound card have a Midi- /Joystick-connector. You can use a standard-Midi-Adapter sold in most computer-shops.

**Other topics...**

## Soundcard: CD-Audio-Port

### Connectors



L = Left Audio-Channel, R = Right Audio-Channel, G = 0V (Ground)

There is software to use CDROM-drives as audio-CD players. The signal is transferred from the CD-ROM drive to the sound card by an internal audio-cable. Old sound cards have three connectors for the audio cable: Sony, Mitsumi und Panasonic. **Today most audio-cables comply with the Panasonic-Standard** The Mitsumi FX-400 and FX-600 also use the Panasonic-Standard. However, the FX-800 does not comply with the Panasonic standard, which means that the audio-cable might have to be modified.

Check the **Windows 95 Audio-Mixer** if the CD-player does not work properly with Windows 95.

**Other Topics...**

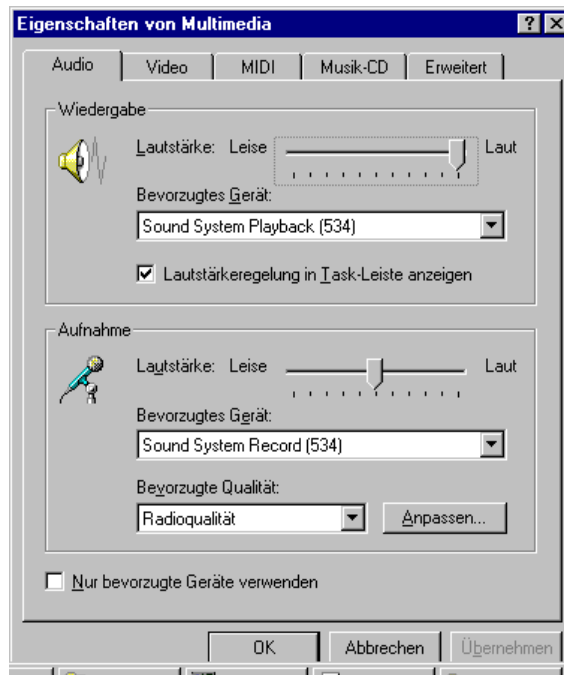
## Windows 95 Audio-Mixer (1)

### How can I adjust the volume for Windows 95 ?

Double-click the speaker on the right side of the task-bar to activate the mixer.



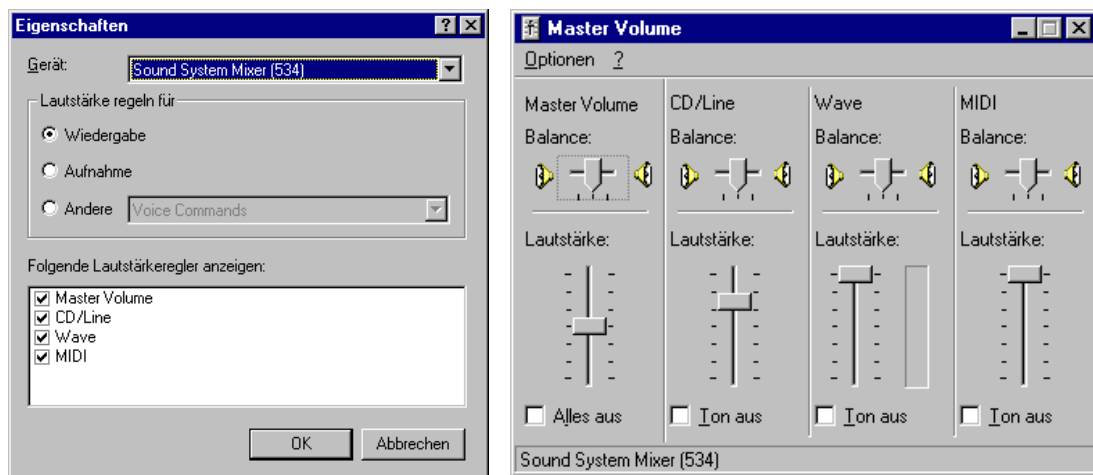
If the symbol is not available, it can be activated by the "Multimedia - Audio" option of the control panel.



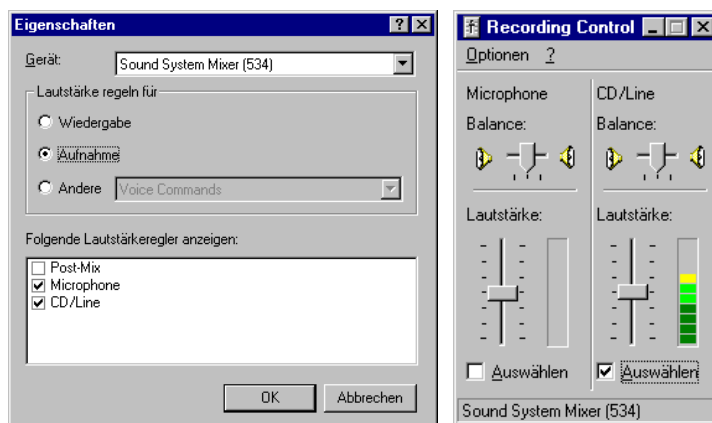
## Windows 95 Audio-Mixer (2)

How can I adjust the volume for Windows 95 ?

### Menue: Playback



### Menue: Playback



**Audio-Software written for Windows 3.11 might cause problems with Windows 95**(for example Sound Impression 3.7. The Windows 95-Mixer might help to solve problems with these programs.

**Other Topics...**

## Windows 95 Driver-Installation (1)

... for example HOT-235

- Start - Setting - Control Panel - Hardware - Continue
- Search? - Cancel - Continue
- Other components - Continue
- Disk A:\ - OK (in case the driver is on the disk)
- (choose for example) "OPTi930 Sound System: Sound/Game" - Continue

Resource	Settings
DMA	00 and 03
E/A-Area	0310-0311
E/A- Area	0F8E-0F8F
E/A- Area	0388-038B
E/A- Area	0604-060B
E/A- Area	0240-024F
E/A- Area	0201
Interrupt	10 and 11

:

You can change the setting in the „System“ option of the device-manager.

Make sure there are no conflicts with other hardware components in your system.

- *Continue* Files are copied and installed on the hard drive.
- *Continue*
- Reboot the system and confirm -Yes!

### **The following message will appear in the DOS-Mode:**

#### *Sound Card Setup for Real Mode DOS*

You may want to use your sound card in REAL DOS environment which is different from DOS Window of Win95. If you have used your sound card in real DOS before this Windows 95 upgrade, please select NO to the following question.

**Do you want to setup your Sound Card for Real Mode DOS Environment?(Y or N)**

Info: For sound in the DOS-Real-Mode special drivers are required.

If you want to install the drivers for the DOS-confirm with „Y“ and insert the drivers disk.

## Windows 95 Driver-Installation (2)

... for example HOT-235

### How to solve an interrupt conflict

If your sound card makes a lasting noise there might be a conflict because the PCI-VGA card and the sound card both use IRQ 11. To solve this problem follow the instructions below:

- *Start - Settings - Control Panel - System*
- *Device-Manager*
- *OPTi 82C930 Sound System*
- *OPTi 930 Sound System: Sound/Game*
- *Properties*
- *Resources*
- *Interrupt 11 - change settings - (5,7,9,10 or 11: for example IRQ 9)*

### Midi-Output: OPL3 or Wave-Table?

The default setting for the Midi-Mapper is FM-Synthesis.

- *Start - Settings - Control Panel*
- *Multimedia - Midi*
- *Option: OPTi 930 FM Synthesis - o.k.*

If there is an onboard or upgrade ~~wavetable-module~~ please choose the following option:

- *OPTi 930 MPU-401.*

**Other Topics...**

## Harddisk

### **Remove diskmanager / Bootsektor-Virus**

Some older mainboards don't support LBA mode for IDE harddisks. For this case manufacturer of harddisks offer a special Diskmanager. Installing this the mainboard can access data beyond 528 MB or 1024 cyl. respectively without LBA option. But how to remove this hidden tool from harddisk? Or how to restore harddisk with boot virus?

#### **Recommendation:**

1. Start system with write protected DOS-bootdisk. Save important data. Enter "FDISK /MBR" at DOS-prompt. That takes some seconds.
2. Switch off system. (no reset)
3. Restart and check with FDISK, if any partition remain (option 4). If yes then remove partition and leave FDISK. When FDISK program prompts you to make a restart the system then switch off. Don't execute reset by hard- or software.
4. After that a new partition can be configured as usual.