



integration with integrity

User's Manual

Single Board Computer 3303955

Version 1.1, June 2001

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## Introduction

The 3303955 is an All-in-One single board computer with a Flat Panel / CRT controller, a Fast Ethernet interface and a socket 370 for a Intel FC-PGA Pentium®-III, Intel FC-PGA / PPGA Celeron™ and Via Cyrix-III CPU.

### Flat Panel / CRT Display

The CHIPS C&T69000 is a highly integrated graphics/flat panel controller integrating 2MB of SDRAM, graphics, flat panel, and CRT control logic on the same die. The C&T69000 delivers super 2D video performance and consumes minimal power

### 10/100 Mbps Networking

A PCI 10BASE-T/100BASE-TX Fast Ethernet interface is included for high speed networking.

### Monitoring and Alarm

The 3303955 includes a multitude of monitoring and alarm functions to protect your board from high temperatures or over voltage exposure.

### DiskOnChip®2000

The 3303955's SSD socket accommodates a DiskOnChip® 2000, a new generation of high performance single-chip Flash Disks up to 288 MB.

### Watchdog Timer

A 6-level Watchdog Timer can invoke an Active NMI or RESET the CPU when your application loses control over the system.

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## Specifications

- **CPU Socket 370** : Intel® Pentium® III, Intel® Celeron™ and VIA Cyrix® III
- **Chipset** : VT82C693A NB and VT82C596B SB (VIA Apollo Pro133) with 133 FSB (CPU speed up to 1.13 GHz) and 133 MHz Memory Bus with support for PC-133 SDRAM
- **BIOS** : Y2K compliant AWARD Flash BIOS supports NCR SCSI, Green&Soft Off function, LS120 and Multiple boot-up
- **Green Function** : power saving supported in BIOS. DOZE / STANDBY / SUSPEND modes, ACPI & APM
- **Secondary Cache** : Integrated on CPU
- **DRAM Memory** : up to 1.5 GB of SDRAM in three 168-pin DIMM sockets (supports PC-133 SDRAM with ECC)
- **PCI Enhanced IDE with Ultra DMA** : supports 2 ports and up to 4 ATAPI devices. PIO mode 3/4 and Bus-Master. Ultra DMA transfer rates of 66 MB/sec, Multiword DMA Mode 2 transfer
- **Bus Interface** : PCI and ISA, complies with PICMG standard
- **Data Bus** : PCI - 32-bit, ISA - 16 bit
- **Bus Speeds** : PCI - 33.3 MHz, ISA - 8.3 MHz
- **DMA Channels** : 8237 x 2 (7-channels)
- **Interrupt Levels** : 15
- **PCI Enhanced IDE with Ultra DMA** : supports two ports and up to four ATAPI devices. Supports PIO mode 3/4 and Bus-Master. Ultra DMA transfer rates of 33/66 MB/sec, Multiword DMA Mode 2 transfer
- **Watchdog Timer** : generates a system RESET or Active NMI  
The timer interval is: 1, 2, 10, 20, 110 and 220 seconds .
- **Real-time Clock** : Benchmark bq3287 AMT (or compatible) with lithium battery backup for 10 years of data retention. CMOS data backup of BIOS setup and BIOS default.
- **Keyboard and Mouse Connectors** :  
6-pin mini DIN for PS/2 mouse, 6-pin mini DIN for Keyboard, 5-pin internal header for AT Keyboard

## High Speed Multi I/O

- **Chipset** : Winbond W83977EF-AW
- **Serial Ports** : one internal/external high speed RS-232 port COM1 (for DVL version only internal connector), one internal high speed RS-232/485 port COM2 (jumper selectable). Both with 16C550 UART and 16 byte FIFO.
- **USB** : two onboard USB ports (12 Mb/s and 1.5 Mb/s)
- **SIR Interface** : 5-pin IrDA TX/RX header
- **Floppy Disk Drive Interface** : up to two floppy drives, 5¼ " (360 KB or 1.2 MB) and 3½ " (720 KB, 1.44 MB or 2.88 MB). BIOS enabled/disabled
- **Bi-directional Parallel Port** : SPP, EPP and ECP mode.

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## Flat Panel / CRT 2D Graphics Accelerator

- **Chipset** : CHIPS C&T69000 HiQVideo™, 2 MB integrated SDRAM on chip
- **BIOS** : combined with system BIOS
- **Display Type** : CRT, TFT, DSTN, SSTN, EL, Plasma  
Quarter VGA, VGA, SVGA, XGA and SXGA
- **Display Mode**

Resolution	Colors	Refresh
rate		
1280 x1024	256	60Hz
1024 x768	64K	60,75,85 Hz
800 x600	262K	60,75,85 Hz

- **Connectors** : external 15-pin D-type female for CRT and onboard 50-pin box header for Flat Panel display

## 10BASE-T/100BASE-TX PCI Ethernet

- **Chipset**: Realtek RTL8139B or compatible
- **Type** : 10BASE-T / 100BASE-TX
- **Connector** : external RJ-45 on bracket
- **Monitoring LEDs**: TX indicator, Network activity indicator
- **Power Saving**: "Wake-up on LAN" function supported in BIOS

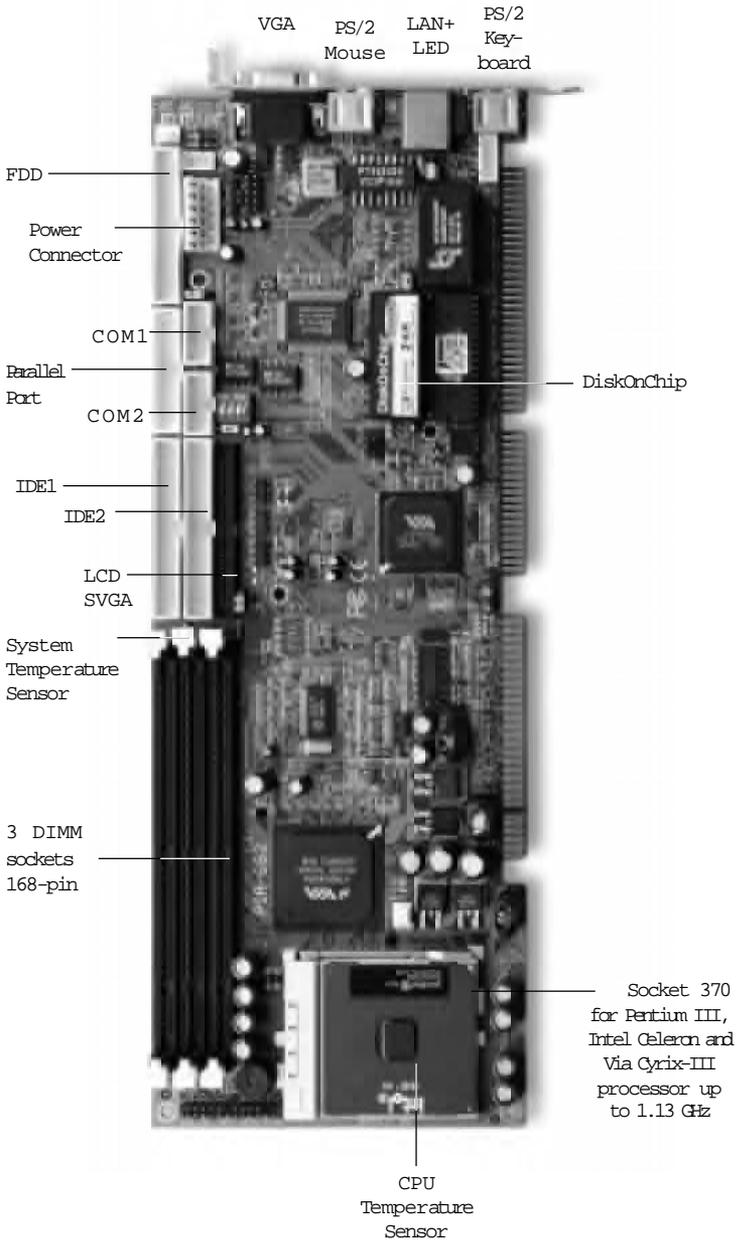
## Flash Disk DiskOnChip®2000

- **Package** : Single Chip Flash Disk in 32-pin DIP JEDEC
- **Capacity** : up to 288 MB
- **Data Reliability** : ECC/EDC error correction
- **Memory Window** : 8 KByte

## Environmental and Power

- **Power Requirements** : +5 V (4.75 ~5.25 V) @ 4.2A  
(366 MHz Celeron CPU and 64 MB SDRAM), ±12 V
- **CPU Power** : onboard PWM switching power supply for autodetects CPU core voltage
- **System Monitoring and Alarm**: CPU and System temperature, system voltage and cooling fan RPM.
- **Board Dimensions** : 338 mm x 122 mm
- **Board Weight** : 0.42 Kg.
- **Operating Temperature**: 0 to 55°C

## Component Location



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# Warning

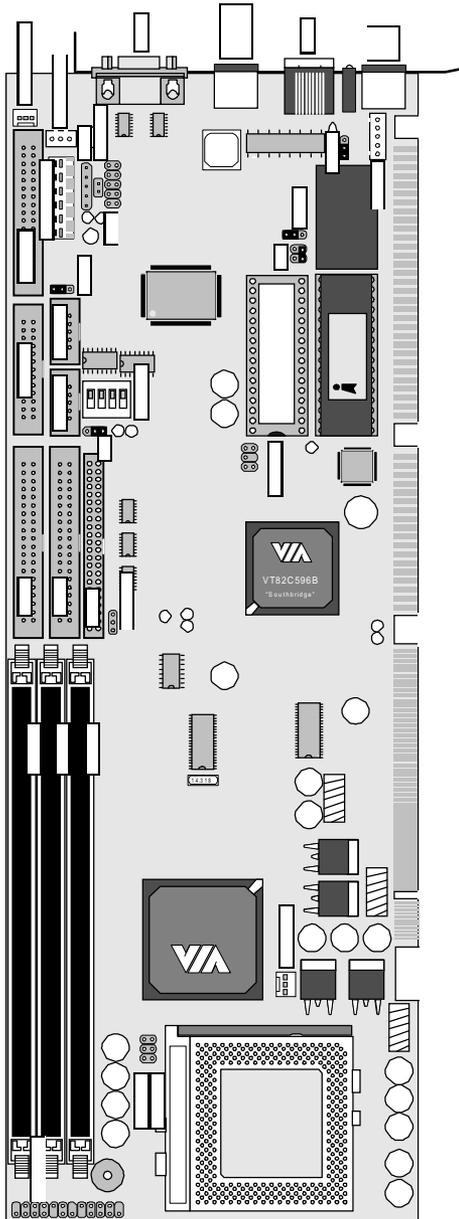
Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it :

1. Disconnect your Single Board Computer from the power source when you want to work on the inside
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that came with the Single Board Computer, whenever components are separated from the system

## Ordering Codes

**3303955A** : Full-size PICMG-bus Socket 370 Pentium III / Celeron  
PC-133 CPU Card with Flat Panel / CRT SVGA, Fast  
Ethernet and DiskOnChip Socket

# Board Layout Front



# Jumper/Connector Quick Reference

## Jumpers

<b>JFSB</b>	<b>FSB speed</b>				
	JFSB1	JFSB2	FSB Speed		
	2-3	2-3	66 MHz		
	1-2	2-3	100 MHz		
	1-2	1-2	133 MHz		
	open	open	Auto Detect		
<b>JRTC</b>	<b>RTC/CMOS Operation</b>				
	1-2	->	Clear		
	2-3	->	Normal Operation		
<b>J2</b>	<b>DiskOnChip Address</b>				
	3-4	->	D8000h		
	open	->	Disabled		
<b>J3</b>	<b>Watchdog Active Mode</b>				
	1-2	->	System RESET		
	2-3	->	active NMI		
	off	->	Disabled		
<b>SWDT</b>	<b>Watchdog Timer Timeout</b>				
	1	2	3	4	Sec
	off	off	on	off	1
	off	off	on	on	2
	off	on	off	off	10
	off	on	off	on	20
	on	off	off	off	110
	on	off	off	on	220
<b>J485</b>	<b>COM2 RS-232/485 Mode</b>				
	1-2	->	RS-232		
	2-3	->	RS-485		
<b>JLAN</b>	<b>Ethernet Function</b>				
	1-2	->	Enabled		
	2-3	->	Disabled		
<b>JVOLT</b>	<b>LCD V<sub>cc</sub> Selection</b>				
	1-2	->	5 Volt		
	2-3	->	3.3 Volt		

## Connectors

<b>CHASFAN</b>	Chassis Fan Power
<b>CPUFAN</b>	CPU Fan Power
<b>SB_LINK</b>	16-bit Soundblaster compatibility signals
<b>VGA</b>	CRT SVGA
<b>LCD</b>	Flat Panel SVGA
<b>FLOPPY</b>	FDD interface
<b>IDE1</b>	Primary IDE
<b>IDE2</b>	Secondary IDE
<b>PRINTER</b>	LPT1, Parallel PORT
<b>JCOM1</b>	COM 1, RS-232
<b>JCOM2</b>	COM2 in RS-232 mode
<b>RS485</b>	COM2 in RS-485 mode
<b>SIR</b>	IrDA Header
<b>USB</b>	Primary/Secondary USB
<b>ATKB</b>	AT Keyboard
<b>PS2KB</b>	PS/2 Keyboard
<b>PS2MOUSE</b>	PS/2 Mouse
<b>PWRCON1</b>	Power Connector
<b>ATXCON</b>	ATX Signal Connector

### Jumper Color

<b>Green :</b>	CPU Speed Ratio
<b>Red :</b>	Voltage Settings
<b>Yellow :</b>	General configuration

## CPU and CMOS Jumper Settings

### FSB/Core Ration (Auto-detect)

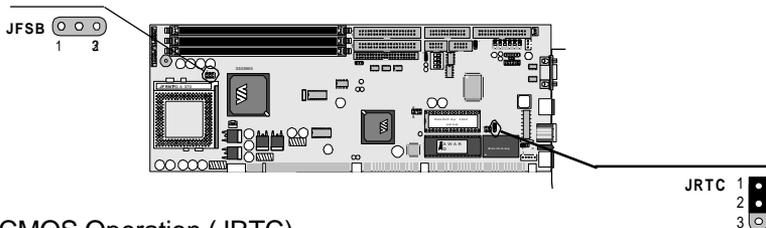
The FSB/Core ratio has been prefixed inside the Pentium-II/III and Celeron CPUs by Intel. The prefixed ratio is auto-detected by the 3303955.

CPU Frequency is ratio multiplied by FSB speed. The FSB value can be set by jumper to 66, 100 or 133 depending on the speed of the Pentium-III / Celeron. Maximum frequency supported is  $8 \times 133 = 1.13 \text{ GHz}$

### FSB speed (JFSB1, JFSB2)

JFSB1	JFSB2	Speed
2-3	2-3	66 MHz
1-2	2-3	100 MHz
1-2	1-2	133 MHz
open	Auto Detect (also overrules Core/FSB ratio)	

default setting



### CMOS Operation (JRTC)

If the SBC refuses to boot due to inappropriate CMOS settings here is how to proceed to clear (reset) the CMOS to its default values

Mode

JRTC	
Normal Operation	2-3
Clear CMOS	1-2

## Watchdog Timer

The onboard watchdog timer can be disabled by jumper setting or enabled for either reboot by RESET or invoking an NMI.(non-maskable interrupt).

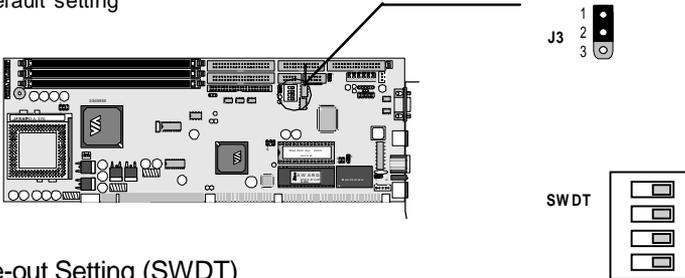
Even if enabled by jumper setting upon boot the watchdog timer is always inactive. To initialize the watchdog timer reading of port 444H is sufficient. To disable the watchdog timer read port 44H.

After the watchdog timer has been initialized by reading port 444H, it has to be strobed at preconfigured intervals to keep it from issuing a RESET or NMI. Intervals can also be selected by jumper setting. Strobing of the watchdog is done by reading port the same port that initializes the watchdog timer: port 444H. Failure to strobe before the configured period expires, indicating a program halt/abort, resulting in a RESET or NMI.

### Mode Setting (J3)

Watchdog Mode	J
3	
RESET	2-3
IOCHK	1-2
Disable Watchdog timer	OFF

default setting



### Time-out Setting (SWDT)

Watchdog Time-out Period	1	2	3
4			
1 sec	OFF	OFF	ON
2 sec	OFF	OFF	ON
10 sec	OFF	ON	OFF
20 sec	OFF	ON	OFF
110 sec	ON	OFF	OFF
220 sec	ON	OFF	OFF

---

## Watchdog Timer Program Control

Function Action	Required
Enable/refresh the Watch -Dog	I/O Read 444H

### Programming Example

The following program is an examples of how to enable, disable and refresh the Watchdog timer:

```
WDT_EN_RF      EQU      0444H
```

```
WDT_DIS        EQU      0044H
```

```
WT_Enable      PUSH     AX           ;save AX DX
                PUSH     DX
                MOV      DX,WDT_EN_RF ;enable the watchdog
                IN       AL,DX
                POP      DX           ;reco AX DX
                POP      AX
                RET
```

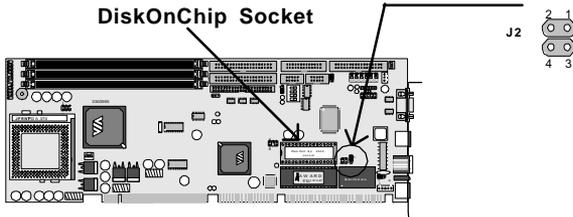
```
WT_Rresh       PUSH     AX           ;save AX DX
                PUSH     DX
                MOV      DX,WDT_ET_RF ;refresh the watchdog
                IN       AL,DX
                POP      DX           ;reco AX, DX
                POP      AX
                RET
```

```
WT_DISABLE     PUSH     AX
                PUSH     DX
                MOV      DX,WDT_DIS;  disable the watchdog
                IN       AL,DX
                POP      DX           ;reco AX, DX
                POP      AX
                RET
```

# DiskOnChip® 2000 Flash Disk

## Installation Instructions

1. Make sure the SBC is powered OFF.
2. Plug the DOC (DiskOnChip 2000) device into its socket. Verify the direction is correct (pin 1 of the DiskOnChip 2000 is aligned with pin 1 of the socket)



3. Set address

Base Address	J2
D8000h	3-4
D0000h	No longer available with Coppermine CPU
Disable	OFF

default setting

4. Power up the system
5. During power up you may observe a message displayed by the DOC when its drivers are automatically loaded into system's memory
6. At this stage the DOC can be accessed as any disk in the system
7. If the DOC is the only disk in the system, it will appear as the first disk (drive C: in DOS)
8. If there are more disks besides the DOC, the DOC will appear by default as the last drive, unless it was programmed as first drive. (please refer to the DOC utilities user manual)
9. If you want the DOC to be bootable:
  - a - copy the operating system files into the DOC by using the standard DOS command (for example: sys d:)
  - b - The DOC should be the only disk in the systems or should be configured as the first disk in the system (c: ) using the DUPDATE utility

For more information on DiskOnChip2000, visit M-Systems Web site at

[http:// www.m-sys.com](http://www.m-sys.com)

where you can find Utilities Manual, Data Sheets and Application Notes. In addition, you can find the latest DiskOnChip 2000 S/W Utilities

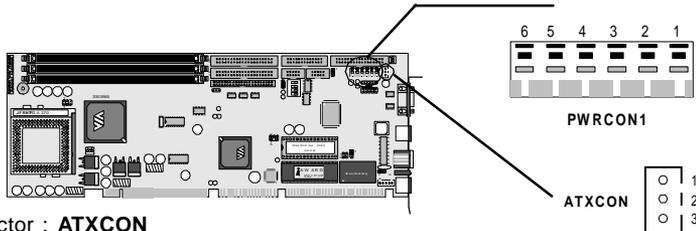
## Power Connectors/Selectors

### Power Connector (PWRCON1, ATXCON)

Connector : **PWRCON1**

Type : 6-pin P8

Pin	Description
6	GND
5	GND
4	-12V
3	+12V
2	+5V
1	PG (power good)



Connector : **ATXCON**

Type : 3-pin onboard header

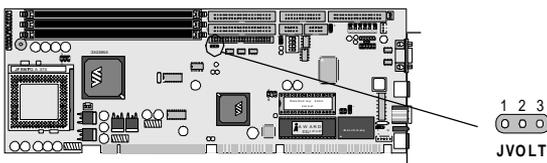
Pin	Description
1	5 V <sub>SB</sub> (standby)
2	GND
3	PS-ON

### LCD Voltage Selection (JVOLT)

Connector : **JVOLT**

Type : 3-pin jumper

Pin	Description
1-2	5 V
2-3	3.3 V



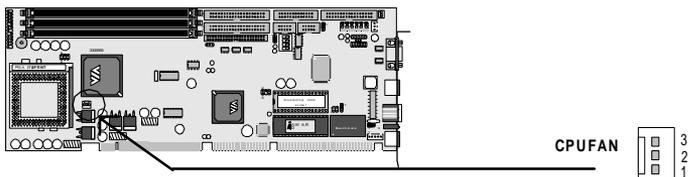
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## CPU Fan Connector (CPUFAN)

Connector : **CPUFAN**

Type : 3-pin onboard header box

Pin	Description
3	FanTach
2	+12 V
1	GND

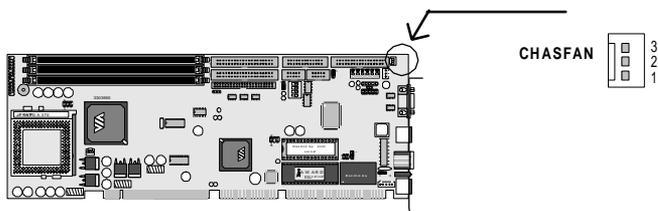


## Chassis Auxiliary Fan Connector (CHASFAN)

Connector : **CHASFAN**

Type : 3-pin onboard header box

Pin	Description
3	Rotation
2	+12 V



## Single Chip Fast Ethernet Controller (opt.)

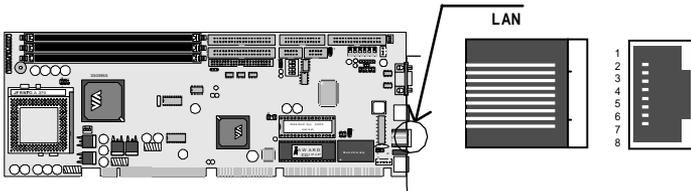
The Realtek RTL8139B/C is a highly integrated single-chip Fast Ethernet controller that provides 32-bit performance, PCI bus master capability, and full compliance with IEEE 802.3u 100Base-T specifications and IEEE 802.3x Full Duplex Flow Control.

### LAN Port (LAN)

Connector : **LAN**

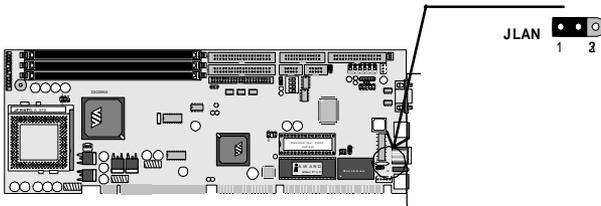
Type : external RJ-45 on bracket (only available on 3303955/DVL)

Pin	1	2	3	4	5	6	7	8
Description	TX+	TX-	RX+	NC	NC	RX-	NC	NC



### Enable/disable LAN Controller (JLAN)

LAN Mode	JLAN	(only available on 3303955/DVL)
Enabled	1-2	
Disabled	2-3	



### LAN LED Indicator (LED)

Connector : **LED**

Type : 3 LED

LED (green)	ACT (yellow)	100 (green)	10

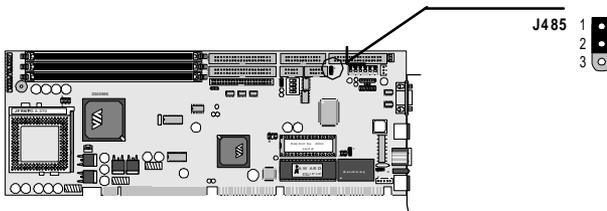
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## Serial Port Selection (RS-232/485)

The onboard COM2 port can be configured to operate either in RS-232 or RS-485 mode. Selection of the mode is done by jumper J485 located right of the two serial onboard header boxes JCOM1 and JCOM2.

In RS-232 mode the onboard 10-pin header box JCOM2 is activated.  
In RS-485 mode the 2-pin header RS485 should be used.

For pinout descriptions of RS485 and JCOM2 see page 19.



### COM RS-232/485 Selection (J485)

Connector : **J485**

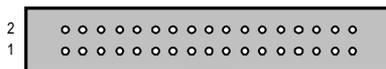
Type : onboard 3-pin header

Mode Connector	J485	Active
RS-232	1-2	JCOM2
RS-485	2-3	RS485

## Interface Connectors HDD, FDD

### Floppy Disk Drive (Floppy)

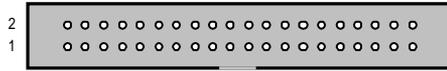
Connector : **Floppy**  
Type : Onboard 34-pin header



Floppy

Pin	Description	Pin	Description
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX
9	GROUND	10	MOTOR ENABLE A
11	GROUND	12	DRIVE SELECT B
13	GROUND	14	DRIVE SELECT A
15	GROUND	16	MOTOR ENABLE B
17	GROUND	18	DIRECTION
19	GROUND	20	STEP
21	GROUND	22	WRITE DATA
23	GROUND	24	WRITE GATE
25	GROUND	26	TRACK 0
27	GROUND	28	WRITE PROTECT
29	GROUND	30	READ DATA
31	GROUND	32	HEAD SELECT
33	GROUND	34	DISK CHANGE

Enhanced IDE  
Connector  
(IDE1, IDE2)



IDE1, IDE2

Connector : **IDE1 and IDE2**

Type : Two onboard 40-pin headers, primary and secondary IDE

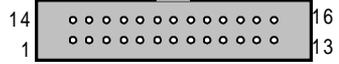
Pin	Description	Pin	Description
1	RESET IDE	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC
21	REQ	22	GND
23	IOW-	24	GND
25	IOR-	26	GND
27	IORDY	28	IDSEL
29	DACK-	30	GND
31	IRQ	32	NC
33	A1	34	GND
35	A0	36	A2
37	CS0	38	CS1
39	ACT-	40	GND

## Peripheral Ports

### Parallel Port (Printer)

Connector : **Printer**

Type : Onboard 26-pin header



**Printer**

Pin	Description	Pin	Description
1	STROBE-	14	AUTOFEED-
2	DATA0	15	ERROR-
3	DATA1	16	INITIALIZE-
4	DATA2	17	SELECT INPUT-
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACKNOWLEDGE-	23	GND
11	BUSY	24	GND
12	PAPER EMPTY	25	GND
13	SELECT+	26	NC

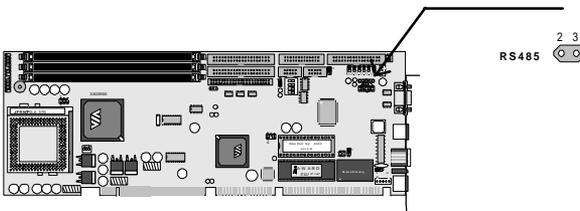
## Serial Ports (JCOM1, JCOM2)



Connector : **JCOM1, JCOM2**

Type : onboard 10-pin header (COM1, COM2)

RS-232	Pin	Description	Pin	Description
	1	DCD	2	RXD
	3	TXD	4	DTR
	5	GND	6	DSR
	7	RTS	8	CTS
	9	RI	10	NC



## Serial Ports (RS485)

Connector : **RS485**

Type : onboard 2-pin header (COM2)

Pin	2	3
Description	RS-485+	RS-485-

## USB Port (USB)



Connector : **USB**

Type : onboard 10-pin header for two USB ports

Pin	Description	Pin	Description
1	Vcc	2	Vcc
3	DATA0-	4	DATA1-
5	DATA0+	6	DATA1+
7	GND	8	GND
9	GND	10	GND

## CRT SVGA (VGA)

VGA

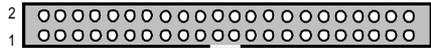


Connector : **VGA**

Type : external 15-pin female VGA connector

Pin	Description	Pin	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	NC	10	GROUND
11	NC	12	DDC DATA
13	HSYNC	14	VSYNC
15	DDCCLK		

## Flat Panel VGA (LCD)



LCD

Connector : **LCD**

Type : Onboard 50-pin header

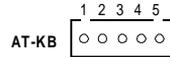
Pin	Description	Pin	Description
1	+12V	2	+12V
3	GND	4	GND
5	+3 PVcc	6	ENAVdd
7	FPVee	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	P24	34	P25
35	SHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL
41	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33
49	P34	50	P35

\* = LCD VCC Voltage Selection with JVOLT (see page 12)

## Keyboard (AT-KB)

Connector : **AT-KB**

Type : Onboard 5-pin header

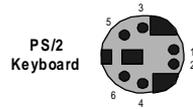


Pin			
1	CLOCK	2	DATA
3	N/C	4	GROUND
5	+5V		

## PS/2 Keyboard

Connector : **PS/2 Keyboard**

Type : external 6-pin Mini DIN connector

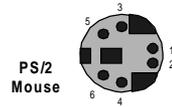


Pin	Description	Pin	Description
1	KB DATA	2	NC
3	GND	4	VCC

## PS/2 Mouse

Connector : **PS/2 Mouse**

Type : external 6-pin Mini DIN connector

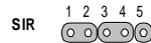


Pin	Description	Pin	Description
1	MS DATA	2	NC
3	GND	4	VCC

## IrDA (SIR)

Connector : **SIR**

Type : onboard 5-pin header



Pin	Description	Pin	Description
1	Vcc	2	NC
3	IRRX	4	GND
5	IRTX		

## Soundblaster Compatibility Connector (SB\_LINK)

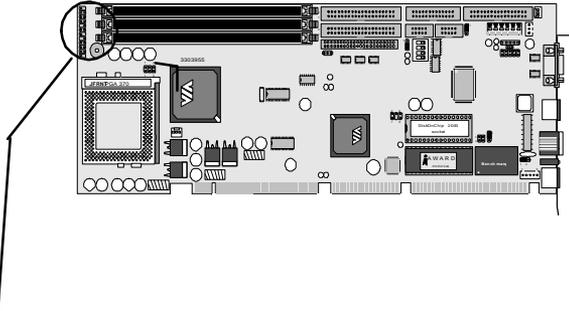
Connector : **SB\_LINK**

Type : onboard 5-pin header

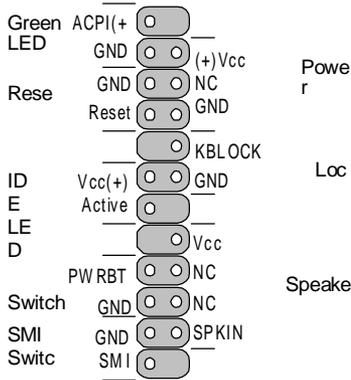


Pin	Description	Pin	Description
1	PCPCIGNT	2	GND
3	NC	4	PCPCIREQN
5	GND	6	SERIRQ

# Switches and Indicators



JFRONT



---

## Software Setup

### Upgrading Windows 95

By the release of Windows 95 in 1996, driver support for several modern hardware devices were not included. Most notably USB support has been added in a later stage. Support to make the best use of Intel's newest chipsets that uses AGP has been added by Intel recently.

When both USB support and the Intel upgrade has to be installed always first install USB support and only than the Intel upgrade.

### USB support under Windows 95

USB functionality can only be achieved under Windows OSR (OEM Service Release) 2.1 or higher. USB upgrades have been included with OSR 2.1 and up. Beware that installation of this upgrade caused many times secondary problems with other devices. For this reason the upgrade itself is not included with the 3303955. To obtain the latest USB update (there have been many) you are advised to visit Microsoft's WWW pages.

How do I know what version of Windows 95 I have ? Right-click your mouse on the My Computer icon and select Properties. Under the System heading at the top it will list your Windows version number.

Version	Description		
4.00.950	Windows	}	No USB support
4.01.970	Windows 95 + Active Accessibility client		
4.00.950a	Windows 95 OSR 1	}	USB support by upgrade
4.00.950b	Windows 95 OSR 2 or 2.1*		
4.00.950c	Windows 95 OSR 2.5	}	USB support built-in
4.10.1998	Windows 98		

### Intel's upgrade for BX chipset under Windows 95

This utility program was developed for updating several Windows 95 INF files so that the latest Intel chipset components can be recognized or configured properly in the system.

One of the following versions of Windows 95 must be installed on the system prior to running utility program:

- Windows 95 4.00.950 (Retail)
- Windows 95 4.00.950b (OSR2 without USB Supplement)
- Windows 95 4.00.950b (OSR2.1 with USB Supplement)
- Windows 95 4.00.950c (OSR2.5 with or without USB Supplement)

For more details refer to the README.TXT file in the /95\_UPGRD/INTEL directory of your 3303955 driver CDROM

---

## Driver Installation

Your 3303955 CDROM includes drivers for :

BusMaster drivers for VIA 693A chipset  
(Windows 95, NT3.51/4.0 and OS/2)

SVGA CHIPS C&T 69000  
(DOS, Windows 3.1, Windows 95/98, Windows NT3.51/4.0 and OS/2)

Ethernet Realtek-8139A  
(DOS ODI Client, NetWare 3.12/4.1/4.11, Novell Client 32 for Windows 95, LAN Server for OS/2 2.3/4.0, Microsoft Network Client for DOS, LAN Manager Workstation/Server, Windows for Workgroups v3.11, Windows NT 3.5, 3.51 & 4.0, Windows 95/OSR2/98, SCO UNIX 4.X/5.X, Packet Driver, LANtastic 6.0 with NDIS driver, Linux 2.x.

**Note** : it is advisable when installing a complete new operating system to copy the needed driver files to the root directories of separate Floppy Disks. Many times the Windows OS setup does not let you "browse" for the right directory on your CDROM but requires you to type the directory structure! In that case working with floppies makes things more simple.

For detailed installation instructions go to the designated directories of the different drivers and read the README files.

---

## System Monitor under Windows 95/98/NT

The System Monitor Software for Windows 95/98/NT4.0, is provided to control the GL520SM Microprocessor System Hardware Monitor. It polls temperature, power supply voltage and fan speeds and shows the updated information on screen. Users can specify temperature, voltage and fan speed boundaries as well as alarm events and polling interval. If an abnormal event happens, the software will pop up a alert window and optionally sound an audible signal to inform the user of the abnormal situation.



### Installing the System Monitor Software on Windows 95 (98) / NT4.0:

1. Start Windows 95/98/NT4.0
2. Insert the 3303955 CDROM and go to the \SYSMONITOR directory
3. Select correct SETUP.EXE for your OS
4. The System Monitor setup program will start.
5. Follow the setup program's on-screen instructions and reboot your computer when the software has been installed.
6. The software will pop up when user click it's icon on taskbar area.

### Custom Programming and Other OS

On request a datasheet is available that describes how to interface directly from within your application to the monitoring circuitry.

## VGA Flat Panel & Wiring Diagrams

On the following pages you will find some examples how to wire these flat panel displays to the 3303955/DVL and 3303955/DV. For additional wiring diagrams or for a customized BIOS that can support other flat panel displays please contact your vendor.

### Flat Panel Connector (LCD)

Pin assignment

The 3303955 provides a 50-pin DIL box header for connecting a Flat Panel Display cable.

Pin 5 provides jumper selectable +3.3V / +5V with JVOULT.

+12 V	1	2	+12 V
GND	3	4	GNDPV
cc	5	6	ENA V <sub>DD</sub>
FPV <sub>EE</sub>	7	8	GND
P0	9	10	P1
P2	11	12	P3
P4	13	14	P5
P6	15	16	P7
P8	17	18	P9
P10	19	20	P11
P12	21	22	P13
P14	23	24	P15
P16	25	26	P17
P18	27	28	P19
P20	29	30	P21
P22	31	32	P23
P24	33	34	P25
SHFCLK	35	36	FLM
M	37	38	LP
GND	39	40	ENABKL
P26	41	42	P27
P28	43	44	P29
P30	45	46	P31
P32	47	48	P33
P34	49	50	P35

---

## NEC NL8060AC26-04 wiring

**Display type** : 800 x 600 TFT Color

NEC NL8060AC26-04 LCD		3303955	
Pin	Description	Pin	
CN1-1	GND	3	GND
CN1-2	Dot Clock	35	SHFCLK
CN1-3	GND	3	GND
CN1-4	Hsync	38	LP
CN1-5	Hsync	36	FLM
CN1-6	GND	3	GND
CN1-7	GND	3	GND
CN1-8	GND	3	GND
CN1-9	R0	27	P18
CN1-10	R1	28	P19
CN1-11	R2	29	P20
CN1-12	GND	4	GND
CN1-13	R3	30	P21
CN1-14	R4	31	P22
CN1-15	R5	32	P23
CN1-16	GND	4	GND
CN1-17	GND	4	GND
CN1-18	GND	4	GND
CN1-19	G0	19	P10
CN1-20	G1	20	P11
CN1-21	G2	21	P12
CN1-22	GND	8	GND
CN1-23	G3	22	P13
CN1-24	G4	23	P14
CN1-25	G5	24	P15
CN1-26	GND	8	GND
CN1-27	GND	8	GND
CN1-28	GND	8	GND
CN1-29	B0	11	P2
CN1-30	B1	12	P3
CN1-31	B2	13	P4
CN1-32	GND	39	GND
CN1-33	B3	14	P5
CN1-34	B4	15	P6
CN1-35	B5	16	P7
CN1-36	GND	39	GND
CN1-37	DE	37	M
CN1-38	PVcc	5	PVcc
CN1-39	PVcc	5	PVcc

---

## NEC NL8060BC31-02 wiring

**Display type** : 800 x 600 TFT Color

NEC NL8060BC31-02 LCD		3303955	
Pin	Description	Pin	
1	GND	3	GND
2	Dot Clock	35	SHFCLK
3	GND	3	GND
4	Hsync	38	LP
5	Vsync	36	FLM
6	GND	3	GND
7	GND	3	GND
8	GND	3	GND
9	R0	27	P18
10	R1	28	P19
11	R2	29	P20
12	GND	4	GND
13	R3	30	P21
14	R4	31	P22
15	R5	32	P23
16	GND	4	GND
17	GND	4	GND
18	GND	4	GND
19	G0	19	P10
20	G1	20	P11
21	G2	21	P12
22	GND	8	GND
23	G3	22	P13
24	G4	23	P14
25	G5	24	P15
26	GND	8	GND
27	GND	8	GND
28	GND	8	GND
29	B0	11	P2
30	B1	12	P3
31	B2	13	P4
32	GND	39	GND
33	B3	14	P5
34	B4	15	P6
35	B5	16	P7
36	GND	39	GND
37	DE	37	M
38	PVcc	5	+3.3V
39	PVcc	5	+3.3V

## LG LG-LP121S1 wiring

**Display type** : 800 x 600 TFT Color

LG LG-LP121S1		3303955 LCD	
Pin	Description	Pin	
1	GND	3	GND
2	Dot Clock	35	SHFCLK
3	GND	3	GND
4	Hsync	38	LP
5	Vsync	36	FLM
6	GND	4	GND
7	GND	4	GND
8	GND	4	GND
9	R0	27	P18
10	R1	28	P19
11	R2	29	P20
12	GND	4	GND
13	R3	30	P21
14	R4	31	P22
15	R5	32	P23
16	GND	33	GND
17	GND	33	GND
18	GND	33	GND
19	G0	19	P10
20	G1	20	P11
21	G2	21	P12
22	GND	8	GND
23	G3	22	P13
24	G4	23	P14
25	G5	24	P15
26	GND	8	GND
27	GND	8	GND
28	GND	8	GND
29	B0	11	P2
30	B1	12	P3
31	B2	13	P4
32	GND	39	GND
33	B3	14	P5
34	B4	15	P6
35	B5	16	P7
36	GND	39	GND
37	DE	37	M
38	MVA		
39	PVcc	5	+3.3V
40	PVcc	5	+3.3V

---

## TOSHIBA LTM10C039 wiring

**Display type** : 800 x 600 TFT Color

TOSHIBA LTM10C039		3303955 LCD	
Pin	Description	Pin	
1	GND	3	GND
2	NCLK	35	SHFCLK
3	GND	3	GND
4	R0	27	P18
5	R1	28	P19
6	R2	29	P20
7	GND	3	GND
8	R3	30	P21
9	R4	31	P22
10	R5	32	P23
11	GND	4	GND
12	G0	19	P10
13	G1	20	P11
14	G2	21	P12
15	GND	4	GND
16	G3	22	P13
17	G4	23	P14
18	G5	24	P15
19	GND	8	GND
20	ENAB	37	DE
21	GND	8	GND
22	B0	11	P2
23	B1	12	P3
24	B2	13	P4
25	GND	39	GND
26	B3	14	P5
27	B4	15	P6
28	B5	16	P7
29	GND	39	GND
30	VDD	5	+5V

---

## KCB104VG2BA-A01 wiring

**Display type** : KYOCERA 9.4" CSTN LCD

### **KCB104VG2BA-A01 w/ MOLEX 53261-1510 3303955 LCD**

Pin	Description	Pin	
Description			
1	FLM	36	FLM
2	NC		
3	Disp	40	ENABKL
4	LOAD	38	LP
5	Vss	3	GND
6	CP	35	SHFCLK
7	Vss	4	GND
8	HD0	20	PD11
9	HD1	19	PD10
10	HD2	18	PD9
1	HD3	17	PD8
12	HD4	12	PD3
13	HD5	1	PD2
14	HD6	10	PD1

### **KCB104VG2BA-A01 w/ MOLEX 53261-1410 3303955 LCD**

Pin	Description	Pin	
Description			
1	LD0	24	PD15
2	LD1	23	PD14
3	LD2	22	PD13
4	LD3	21	PD12
5	LD4	16	PD7
6	LD5	15	PD6
7	LD6	14	PD5
8	LD7	13	PD4
9	VDD	5	+5V
10	Vss	39	GND
11NC	-	-	-
12	NC	-	-
13	NC	-	-

---

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## Standard CMOS Setup

ROM PCI/ISA BIOS (2A6LGTPU)								
STANDARD CMOS SETUP								
AWARD SOFTWARE, INC.								
Date (mm:dd:yy) : Fri, 21, May, 000								
Time (hh:mm:ss) : 20:37:12								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOM	LANDE	SECTOR	MODE
Primary Master	:Auto	0	0	0	0	0	0	AUTO
Primary Slave	:Auto	0	0	0	0	0	0	AUTO
Secondary Master	:Auto	0	0	0	0	0	0	AUTO
Secondary Slave	:Auto	0	0	0	0	0	0	AUTO
Drive A : 1.44M , 3.5 in.					Base Memory : 640K			
Drive B : None					Extended Memory :130048K			
Video : EGA / VGA					Other Memory : 384K			
Halt On : All, But Keyboard					Total Memory :131072K			
Esc: Quit			- ~ @ ~ : Select Item			PU/PD/+/- : Modify		
Fl : Help			(Shift)F2 : Change Color					

### Date

The BIOS determines the day of the week from the other date information; this field is for information only.

### Time

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the « or ( key to move to the desired field . Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

### Hard Disks

The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or about other hard drive types, such as SCSI drives.

**NOTE** : recommend that you select type AUTO for all drives.

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select type AUTO for a hard drive, the BIOS detects its specifications during POST, every time the system boots. If you do not want to select drive type AUTO, other methods of selecting the drive type are available:

1. Match the specifications of your installed IDE hard drive(s) with the preprogrammed values for drive types 1 through 45.

- 
2. Select USER and enter values into each drive parameter field.
  3. Use the IDE HDD AUTO DETECTION function in Setup.

Here is a brief explanation of drive specifications:

**Type:** The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as type USER.

**Size:** Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.

**Cyls:** Number of cylinders

**Head:** Number of heads

**Precomp:** Write precompensation cylinder

**Landz:** Landing zone

**Sector:** Number of sectors

**Mode:** Auto, Normal, large, or LBA

**Auto**

The BIOS automatically determines the optimal mode.

**Normal**

Maximum number of cylinders, heads, and sectors supported are 1024, 16, and 63.

**Large**

For drives that do not support LBA and have more than 1024 cylinders. Applicable to only a few drives.

**LBA**

Logical Block Addressing. During drive accesses, the IDE controller transforms the data address described by sector, head, and cylinder number into a physical block address, significantly improving data transfer rates. For drives with greater than 1024 cylinders.

---

## Drive A, B

Select the correct specifications for the diskette drive(s) installed in the computer.

<b>None</b>	:	No diskette drive installed
<b>360K</b>	:	5.25 in5-1/4 inch PC-type standard drive
<b>1.2M</b>	:	5.25 in5-1/4 inch AT-type high-density drive
<b>720K</b>	:	3.5 in3-1/2 inch double-sided drive
<b>1.44M</b>	:	3.5 in3-1/2 inch double-sided drive
<b>2.88M</b>	:	3.5 in3-1/2 inch double-sided drive

**Video** Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.

**Halt On** During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:

No errors	POST does not stop for any errors.
All errors	If the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
All, But Keyboard	POST does not stop for a keyboard error, but stops for all other errors.
All, But Diskette	POST does not stop for diskette drive errors, but stops for all other errors.
All, But Disk/Key	POST does not stop for a keyboard or disk error, but stops for all other errors.

## BIOS Features Setup

ROM PCI/ISA BIOS (2A6LGTPU)			
STANDARD CMOS SETUP			
AWARD SOFTWARE, INC.			
Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D4000-D7FFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	D8000-DBFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled		
Boot Up NumLock Status	: On		
Boot Up System Speed	: High Gate		
A20 Option	: Normal		
Typematic Rate Setting	: Disabled		
Typematic Rate (Char/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup	Esc: Quit	- ~ @ ~ : Select Item
PCI/VGA Palette Snoop	: Disabled	F1: Help	PU/PD/+/- : Modify
OS Select for DRAM > 64MB	: Non-OS2	F5: Old Values (Shift)F2: Color	
		F6: Load BIOS Defaults	
		F7: Load Setup Defaults	

### Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

### CPU Internal Cache & CPU External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU.

### CPU L2 Cache ECC Checking

When you select Enabled, memory checking is enable when the external cache contains ECC SRAMs.

### Quick Power On Self Test

Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

---

### **Boot Sequence**

The original IBM PCs loaded the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, modern computers usually load the operating system from the hard drive, and may even load it from a CD-ROM drive.

### **Swap Floppy Drive**

This field is effective only in systems with two floppy drives. Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

### **Boot Up Floppy Seek**

When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to Disabled to save time.

### **Boot Up NumLock Status**

Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.

### **Boot Up System Speed**

Select High to boot at the default CPU speed; select Low to boot at the speed of the AT bus. Some add-in peripherals or old software (such as old games) may require a slow CPU speed. The default setting is High.

### **Gate A20 Option**

Gate A20 refers to the way the system addresses (extended) memory above 1 MB. When set to Fast, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

### **Typematic Rate Setting**

When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystrokes repeat at a rate determined by the keyboard controller in your system. When Enabled, you can select a typematic rate and typematic delay.

#### **Typematic Rate (Chars/Sec)**

When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10,12, 15, 20, 24 or 30 characters per second.

#### **Typematic Delay (Msec)**

When the typematic rate setting is enabled, you can select a typematic delay (the delay before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

---

## Security Option

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

**System**            The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

**Setup**             The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

**Note:** To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press Enter, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

## PCI/VGA Palette Snoop

Normally this option is always disabled !

Nonstandard VGA display adapters such as overlay cards or MPEG video cards may not show colors properly. Setting "PCI/VGA Palette Snoop" to Enable should correct this problem. If the PCI/VGA Palette Snoop is "Enabled", any I/O access on the ISA-bus to the VGA card's palette registers will be reflected on the PCI bus. This will allow overlay cards to adapt to the changing palette colors.

## OS Select for DRAM > 64MB

**Non-OS/2**        If your operating system is not OS/2

**OS/2**             If system DRAM is more than 64MB and if your operating system is OS/2.

## Video BIOS Shadow

Enabled this copies the video BIOS from ROM to RAM. effectively enhancing performance, and reducing the amount of upper memory available by 32KB (the C000~C7FFF area of memory between 640 KB and 1 MB is used).

## C8000-CBFFF Shadow

Enabling any of the C8000~DFFFF segments allows components to move their firmware into these upper memory segments. However your computer can lock-up doing so, because some devices don't like being shadowed at those particular 16 KB segments of upper memory.

Note - In Windows 95, double click 'Computer' within Device Manager and select 'Memory'. This will tell you what segments (if any) are being shadowed For DOS you can use MSD.EXE to see what segments are claimed.

CC000-CFFFF - D0000-D3FFF - D4000-D7FFF - D8000-DBFFF and  
DC000-DFFFF - Same as above.

## Chipset Features Setup

ROM PCI/ISA BIOS (2A6LGTPU) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.		
Bank 0/1 DRAM Timing	: <b>Normal</b>	Auto Detect DIMM/PCI Clk: Enabled
Bank 2/3 DRAM Timing	: Normal	Spread spectrum : Disabled
Bank 4/5 DRAM Timing	: Normal	CPU Host/PCI Clock : Default
SDRAM Cycle Length	: 3	CPU Warning Temperature : Disabled
DRAM Clock	: HCLK-33M	Current CPU Temperature : 36°C/96°F
Memory Hole	: Disabled	Current System Temp. : 26°C/78°F
Read Arround write	: Disabled	Current CPUFAN Speed : 3825 RPM
Concurrent PCI/Host	: Disabled	Current CHASFAN Speed : 0 RPM
System BIOS Cacheable	: Disabled	Current V <sub>cc</sub> (V) : 4.99
Video BIOS Cacheable	: Disabled	Current V <sub>10</sub> (V) : 3.49
Video RAM Cacheable	: Disabled	Current 12V : 12.26
AGP Aperture Size (MB)	: 64	Current V <sub>aux</sub> (V) : 1.65
AGP 2X MODE	: Enabled	
		Esc: Quit - ~ @ ~ : Select Item
		F1 : Help PU/PD/+/- : Modify
		F5 : Old Values (Shift)F2: Color
		F6 : Load BIOS Defaults
		F7 : Load Setup Defaults

### Bank x/x DRAM Timing

Bank 0/1, 2/3, 4/5 DRAM Timing, DRAM timing is controlled by the DRAM timing registers. The timings programmed into this register are dependent on the system design. The slower timing may be required in certain system designs to support loose layouts or slower memory. Options are SDRAM 10ns, SDRAM 8ns, Normal, Medium, Fast, Turbo.

### SDRAM Cycle Length

This feature is similar to SDRAM CAS Latency Time. It controls the time delay (in clock cycles - CLKs) that passes before the SDRAM starts to carry out a read command after receiving it. This also determines the number of CLKs for the completion of the first part of a burst transfer. Thus, the lower the cycle length, the faster the transaction. However, some SDRAM cannot handle the lower cycle length and may become unstable. So, set the SDRAM Cycle Length to **2** for optimal performance if possible but increase it to **3** if your system becomes unstable. Cycle length specifications are to be found on your SDRAM used in the system

### DRAM Clock : HCLK-33M

This item allows you to set the DRAM Clock. Options are Host CLK or HCLK-33M. You must set DRAM Clock as 66MHz if EDO RAM was installed on board. Please set the item according to the Host (CPU) Clock and DRAM Clock.

---

**Read Arround write : Disabled**

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM

**Memory Hole**

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

Enabled Memory hole supported.

Disabled Memory hole not supported.

**Concurrent PCI/Host : Disabled**

When Disabled, CPU bus will be occupied during the entire PCI operation period.

**System BIOS Cacheable**

Select Enabled allows caching of the system BIOS ROM at F000h-FFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Enabled BIOS access cached

Disabled BIOS access not cached

**Video BIOS Cacheable**

Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program directly writes to this memory area, a system error may result.

**Video RAM Cacheable**

Selecting Enabled allows caching of the video memory (RAM) at A0000h to AFFFFh, resulting in better video performance. However, if any program writes to this memory area, a memory access error may result.

**AGP Aperture Size (MB)**

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See [www.agpforum.org](http://www.agpforum.org) for APG information.

**Auto Detect DIMM/PCI Clk: Enabled**

The default setting is "Enabled" To reduce the occurrence of electro magnetic interference (EMI) the BIOS detects the presence or absence of components in DIMM and PCI -slots. and turns of the system generator pulses to empty slots.

**Spread spectrum : Disabled**

Using the default setting (Disabled) increases system stability.

---

**CPU Host/PCI Clock** : **Default**

The value of this item depends on the speed of the CPU.

- Select Default, 66, 75 or 83 MHz if your CPU is 66 MHz FSB
- Select Default, 100, 103, 112 or 124, if the CPU is 100 MHz FSB.
- Select 124, 133, 140 or 150MHz. if your CPU is 133 MHz FSB

**CPU Warning Temperature**

Select the combination of lower and upper limits for the CPU temperature. If the CPU temperature extends beyond either limit, any warning mechanism programmed into your system will be activated.

**Current CPU Temperature**

A sensor inside the CPU package monitors the current CPU temperature.

**Current System Temp.**

A sensor onboard the 3303955 board monitors the current system temperature.

**Current CPU FAN Speed**

When using the onboard CPU power connector (3-wire !), the BIOS can detect the the actual rounds per minute (RPM) of the fan

**Current  $V_{CC}$**

External power supply to board should be ~ +5 V

**Current  $V_{IO}$**

Power supply for DIMM, Chipset and Slot 1 Cache, should be ~ 3.5 V

**Current 12V**

External power for Serial port, FAN etc should be ~ +12 V

**Current  $V_{CORE}$**

Power supply for CPU core, depends on type of CPU

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## Power Management Setup

ROM PCI/ISA BIOS (2A6LGTPU) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.		
ACPI Function	: <b>Disable</b>	** Reload Global timer Events **
Power Management	: Disable	IRQ[3-7,9-15], NMI : Enabled
PM Control by APM	: Yes	Primary IDE 0 : Disabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 1 : Disabled
Video Off After	: Suspend	Secondary IDE 0 : Disabled
Modem Use IRQ	: 3	Secondary IDE 1 : Disabled
Soft		Floppy Disk : Disabled
Doze Mode	: Disable	Serial Port : Disabled
Standby Mode	: Disable	Parallel Port : Disabled
Suspend Mode	: Disable	
HDD Power Down	: Disable	
Throttle Duty Cycle	: 62.5%	
PCI/VGA Act-Monitor	: Disable	
PowerOn by Ring	: Disable	
Resume by Alarm	: Disable	
Wake up on LAN	: Disable	
IRQ 8 Break Suspend	: Disable	
		Esc: Quit - ^ @ ~ : Select Item
		F1: Help PU/PD/+/- : Modify
		F5: Old Values (Shift)F2: Color
		F6: Load BIOS Defaults
		F7: Load Setup Defaults

### ACPI Function

Select Enabled only if your computer's operating system supports the Advanced Configuration and Power Interface (ACPI) specification.

Currently, Windows 98 and Windows NT 5.0 (beta) support ACPI.

### Power Management

There are 4 selections for Power Management, 3 of which have fixed mode :

- |                   |   |
|-------------------|---|
| Disable (default) | No power management. Disables all four modes  |
| Min. Power Saving | Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.  |
| Max. Power Saving | Maximum power management -- ONLY AVAILABLE FOR SL CPU'S. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.                              |
| User Defined      | Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable. |

### PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock.

If the Max. Power Saving is not enabled, this will be preset to No.

---

### Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank causes the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Blank Screen This option only writes blanks to the video buffer.

DPMS Initial display power management signaling.

### Video Off After

When enabled, the VGA adapter will operate in a power saving mode.

N/A Monitor will remain on during power saving modes.

Suspend Monitor blanked when system enters the Suspend mode.

Standby Monitor blanked when system enters Standby mode.

Doze Monitor blanked when system enters any power saving mode.

### Modem Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

**Doze Mode** : when enabled and after the set time of system inactivity, CPU clock will run at slower speed while other devices still operate at full speed.

**Standby Mode** : when enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

**Suspend Mode** : when enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

**HDD Power Down** : when enabled and after the set time of system inactivity, hard disk drive will be powered down while all other devices remain active.

**Throttle Duty Cycle** When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs. The Choice: 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, 75.0%

### PCI/VGA Act-Monitor

When Enabled, any video activity restarts the global timer for Standby mode.

### PowerOn by Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

### Wake up on LAN

When Enabled, an input signal from a local area network (LAN) awakens the system from a soft off state.

**IRQ 8 Break Suspend** : enable or disable monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

**\*\* Reload Global Timer Events \*\*** when Enabled, an event occurring on each device listed restarts the global time for Standby mode.

---

## Integrated Peripherals

ROM PCI/ISA BIOS (2A6LGTPU) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.			
IDE HDD Block Mode	: <b>isabled</b>	IR Transmission Delay	:
IDE Primary Master PIO	: Auto	Onboard Parallel Port	: 3BC/IRQ7
IDE Primary Slave PIO	: Auto	Parallel Port Mode	: ECP/EPP
IDE Secondary Master PIO	: Auto	ECP Mode Use DMA	: 3
IDE Secondary Slave PIO	: Auto	EPP Mode Select	: EPP1.9
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Init Display First	: PCI slot		
KBC Input Clock	: 8 MHz		
Onboard FDC Controller	: Enabled	Esc: Quit	- ~ @ ~ : Select Item
Onboard Serial Port 1	: 3F8/IRQ4	F1: Help	PU/PD/+/- : Modify
Onboard Serial Port 2	: 2F8/IRQ3	F5: Old Values (Shift)	F2: Color
UART Mode Select	: IrDA	F6: Load BIOS Defaults	
RxD, TxD Active	: Hi, Hi	F7: Load Setup Defaults	

### IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled IDE controller uses block mode.

Disabled IDE controller uses standard mode.

### IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

### IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

The Choice: Auto, Disabled

### On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.

---

### **USB Keyboard Support**

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

### **Init Display First**

Initialize the PCI slot video display before initializing any other display device on the system. Thus the PCI display becomes the primary display.

### **KBC Input Clock**

The system designer must select the correct frequency for the keyboard controller input clock. Do not change this value from the default value.

### **Onboard FDC Controller**

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

### **Onboard Serial Ports (1, 2)**

Select a logical COM port address for the first and second serial ports.

### **UART Mode Select**

The second serial port on your system may offer a variety of infrared port modes. Options are :

Normal : standard RS-232 port

IrDA : Infrared port

ASK IR : Amplitude shift keyed infrared port

### **RxD, TxD Active**

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

### **IR Transmission Delay**

### **Onboard Parallel Port**

Select a logical LPT port name and matching address for the physical parallel (printer) port.

### **Parallel Port Mode**

Select an operating mode for the onboard parallel port. Select Normal unless your hardware and software require one of the other modes offered in this field.

### **ECP Mode Use DMA**

Select a DMA channel for the port.

### **EPP Mode Select**

Select EPP port type 1.7 or 1.9.

## PNP/PCI Configuration

ROM PCI/ISA BIOS (2A6LGTPU)			
PNP/PCI CONFIGURATION			
AWARD SOFTWARE, INC.			
PNP OS Installed	: <input checked="" type="radio"/> No	Used MEM base addr	: C800
Resources Controlled By	: Manual	Used MEM Length	: 16K
Reset Configuration Data	: Disabled	Assign IRQ for USB	: Enabled
IRQ-3 assigned to	: PCI/ISA Pnp		
IRQ-4 assigned to	: PCI/ISA Pnp		
IRQ-5 assigned to	: PCI/ISA Pnp		
IRQ-7 assigned to	: PCI/ISA Pnp		
IRQ-9 assigned to	: PCI/ISA Pnp		
IRQ-10 assigned to	: PCI/ISA Pnp		
IRQ-11 assigned to	: PCI/ISA Pnp		
IRQ-12 assigned to	: PCI/ISA Pnp		
IRQ-14 assigned to	: PCI/ISA Pnp		
IRQ-15 assigned to	: PCI/ISA Pnp		
DMA-0 assigned to	: PCI/ISA Pnp		
DMA-1 assigned to	: PCI/ISA Pnp		
DMA-3 assigned to	: PCI/ISA Pnp	Esc: Quit	: Select Item
DMA-5 assigned to	: PCI/ISA Pnp	F1: Help	PU/PD/+/- : Modify
DMA-6 assigned to	: PCI/ISA Pnp	F5: Old Values (Shift)	F2: Color
DMA-7 assigned to	: PCI/ISA Pnp	F6: Load BIOS Defaults	
		F7: Load Setup Defaults	

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

### PNP OS Installed

Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95). Choice: Yes and No.

### Resources Controlled By

The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them. Choice: Auto and Manual.

### Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot. Choice: Enabled and Disabled.

---

### **IRQ n Assigned to**

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

- Legacy ISA    Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
- PCI/ISA PnP    Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

### **DMA n Assigned to**

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

- Legacy ISA    Devices compliant with the original PC AT bus specification, requiring a specific DMA channel
- PCI/ISA PnP    Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

**PCI IDE IRQ Map to**    This field lets you select PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA). Standard ISA interrupts for IDE channels are IRQ14 for primary and IRQ15 for secondary. Choice: PCI-SLOT1, PCI-SLOT2, PCI-SLOT3, PCI-SLOT4, ISA, PCI-AUTO

### **Used MEM base addr**

Select a base address for the memory area used by any peripheral that requires high memory. Choice: C800, CC00, D000, D400, D800, DC00, N/A.

### **Used MEM Length**

Select a length for the memory area specified in the previous field. This field does not appear if no base address is specified. Choice: 8K, 16K, 32K, 64K.

### **Assign IRQ for USB**

Windows 95 will automatically give an IRQ to the USB port even if there is no USB peripheral connected. Disabling this will free an IRQ.

---

## POST Codes

The following codes are not displayed on the screen. They can only be viewed on the LED display of a so called POST card. The codes are listed in the same order as the according functions are executed at PC startup. If you have access to a POST Card reader, you can watch the system perform each test by the value that's displayed. If the system hangs (if there's a problem) the last value displayed will give you a good idea where and what went wrong, or what's bad on the system board.

<b>CODE</b>	<b>CHECK</b>	<b>DESCRIPTION OF CHECK</b>
C0	Turn Off Chipset	OEM Specific-Cache control Cache
01	Processor Test 1	Processor Status (1FLAGS) Verification. Tests the following processor status flags:carry, zero, sign, overflow, The BIOS sets each flag, verifies they are set, then turns each flag off and verifies it is off.
02	Processor Test 2	Read/Write/Verify all CPU registers except SS, SP, and BP with data pattern FF and 00.
03	Initialize Chips	Disable NMI, PIE, AIE, UEI, SQWV Disable video, parity checking, DMA Reset math coprocessor Clear all page registers, CMOS shut-down 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 to keep the memory from decaying. This function ensures that the memory refresh function is working properly.
05	Blank video Initialize keyboard	Keyboard controller initialization
06	Reserved	
07	Test CMOS Interface and Battery Status	Verifies CMOS is working correctly, detects bad battery.
BE	Chipset Default Initialization	Program chipset registers with power on BIOS defaults.

---

C1	Memory presence test	OEM Specific-Test to size on-board memory
C5	Early Shadow	OEM Specific-Early Shadow enable for fast boot.
C6	Cache presence test	External cache size detection
08	Setup low memory	Early chip set initialization Memory presence test OEM chip set routines Clear low 64K of memory Test first 64K memory.
09	Early Cache Initialization	Cyrix CPU initialization Cache initialization
0A	Setup Interrupt Vector Table	Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL
0B	Test CMOS RAM Checksum	Test CMOS RAM Checksum, if bad, or insert key pressed, load defaults.
0C	Initialize keyboard	Detect type of keyboard controller (optional) Set NUM_LOCK status.
0D	Initialize Video Interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter.
0E	Test Video Memory	Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup.
0F	Test DMA Controller 0	BIOS checksum test. Keyboard detect and initialization
10	Test DMA Controller 1	
11	Test DMA Page Registers	Test DMA Page Registers.
12-13	Reserved	

---

14	Test Timer Counter 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 interrupt lines.
16	Test 8259-2 Mask Bits	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt 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 the interrupt occurred.
19	Test Stuck NMI Bits (Parity/IO Check)	Verify NMI can be cleared.
1A		Display CPU clock
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).
20	Enable Slot 0	Initialize slot 0 (System Board).
21-2F	Enable Slots 1-15	Initialize slots 1 through 15.
30	Size Base and Extended Memory	Size base memory from 256K to 640K and extended memory above 1MB.
31	Test Base and Extended Memory	Test base memory from 256K to 640K and extended memory above 1MB using various patterns. NOTE: This test is skipped in EISA mode and can be skipped with ESC key in ISA mode.

---

32	Test EISA Extended Memory	If EISA Mode flag is set then test EISA memory found in slots initialization. NOTE: This test is skipped in ISA mode and can be skipped with ESC key in EISA mode.
33-3B	Reserved	
3C		Setup
3D	Initialize & Install Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
3E	Setup Cache Controller	Initialize cache controller.
3F	Reserved	
BF	Chipset Initialization	Program chipset registers with Setup values
40		Display virus protect disable or enable
41	Initialize Floppy Drive & Controller	Initialize floppy disk drive controller and any drives.
42	Initialize Hard Drive & Controller	initialize hard drive controller and any drives.
43	Detect & Initialize Serial/Parallel Ports	Initialize any serial and parallel ports (also game port).
44	Reserved	
45	Detect & Initialize Math Coprocessor	Initialize math coprocessor.
46	Reserved	
47	Reserved	
48-4D	Reserved	
4E	Manufacturing POST Loop Display Messages	Reboot if Manufacturing POST Loop pin or 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 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 C8000h to EFFFFh. NOTE: When FSCAN option is enabled, ROMs initialize from C8000h to F7FFFh.
53	Initialize Time Value	Initialize time value in 40h: BIOS area.
60	Setup Virus Protect	Setup virus protect according to Setup
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.
B0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display: Press F1 to disable NMI, F2 reboot.
E1-EF	Setup Pages	E1- Page 1, E2 - Page 2, etc.
FF	Boot	

---

## Howto : Flash the BIOS

To flash your BIOS you'll need

- 1) a xxxxx.bin file that is a file image of the new BIOS
- 2) AWDFLASH.EXE a utility that can write the data-file into the BIOS chip.

Create a new, clean DOS 6 bootable floppy with "format a: /s".

Copy flash utility and the BIOS image file to this disk.

Turn your computer off. Insert the floppy you just created and boot the computer. As it boots up, hit the [DEL] key to enter the CMOS setup. Go to "LOAD SETUP (or BIOS) DEFAULTS," and then save and exit the setup program. Continue to boot with the floppy disk.

Type "AWDFLASH" to execute the flash utility. When prompted, enter the name of the new BIOS image and begin the flash procedure. Note: If you reboot now, you may not be able to boot again.

After the flash utility is complete, reboot the system.

What to do when the Award flasher says:  
Insufficient memory

1. In CMOS Chipset Features Setup, Disable Video Bios Cacheable.
2. Hit Esc, F10, Save and exit.
3. Flash the BIOS and reboot
4. Enter CMOS Chipset Features Setup, and Enable Video Bios Cacheable, hit Esc, F10, Save and reboot.

---

## What if things go wrong

if you use the wrong Flash BIOS or if the writing process gets interrupted, there is a fat chance that your computer won't boot anymore.

How can you recover a corrupt BIOS ?

**Boot-block booting** (this works only for Award BIOS)

Modern motherboards based on Award BIOS have a boot-block BIOS. This is small area of the BIOS that doesn't get overwritten when you flash a BIOS. The boot-block BIOS only has support for the floppy drive. If you have the AGP video enabled you won't see anything on the screen because the boot-block BIOS only supports an ISA videocard.

If you do not want to change your AGP video setting than proceed as follows:

The boot-block BIOS will execute an AUTOEXEC.BAT file on a bootable diskette. Copy an Award flasher & the correct BIOS \*.bin file on the floppy and execute it automatically by putting awdf flash \*.bin in the AUTOEXEC.BAT file.

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Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact us. We will do our best to support your products, projects and business.



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