# Global
## AMERICAN

*integration with integrity*

**User's Manual**

**Single Board Computer 3307157**

**Version  1.1,  July 2002**

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# Table of Contents

# Specifications

## General Specifications

- CPU : Embedded Intel® Pentium-III / Celeron Mobile Low Power
- Chipset : Intel® 82443 BX chipset with PIIX4E
- BIOS : AWARD Flash BIOS Green&Soft Off function, LS120, Multiple boot function
- Green Function : power saving supported in BIOS. DOZE /STANDBY / SUSPEND modes, ACPI & APM
- L2 Cache : integrated in CPU
- DRAM Memory : onboard 128 MB SDRAM and optional SO-DIMM socket that supports up to 256 MB of SDRAM; total memory capacity up to 384 MB of SDRAM.
- PCI Enhanced IDE with Ultra DMA : 2 ports and up to 4 ATAPI devices, UltraDMA-33 supported.
- Watchdog Timer : 128-level timer generates RESET or NMI when your application loses control over the system.
- Real-time Clock : built-in chipset with lithium battery backup for 10 years of data retention. CMOS data backup of BIOS setup and BIOS default.
- GPIO Interface : 16-bit GPIO, 8 independent GPI and 8independent GPO programamble by software.

## Expansion Interfaces

- PCI slot : 32-bits
- PC/104-*Plus* : 32-bit PCI and 8/16-bit ISA-based

## Flash Disk DiskOnChip®2000

- Package : Single Chip Flash Disk in 32-pin DIP JEDEC
- Capacity : up to 288 MByte

## High Speed Multi I/O

- Chipset : Winbond W83977EF-AW
- Serial Ports : three high speed RS-232C ports (COM1/3/4) and one jumper selectable RS-232C/422/485 (COM2) with 16C550 compatible UART and 16 byte FIFO, all provide jumper selecable +5V/+12V DC power
- USB : onboard 2 USB ver 1.0 ports
- SIR Interface : onboard IrDA TX/RX port
- Floppy Disk Drive Interface : 1 ports and up to 2 floppy disk drives.
- Bi-directional Parallel Port : 2 parallel ports with SPP, EPP and ECP mode.
- Keyboard / Mouse Connectors : external PS/2 Keyboard / Mouse port

### Network Interface

- Chipset : Intel 82559, 10/100 Mbps, autoswitching, Wake-on-LAN supported

### Audio Interface

- Chipset : ES1938S, ESS Solo-1 3D Audio Controller

### VGA Interface

- Chipset : C&T 69000 with 2MB on-die SDRAM, AGP interface and 64-bit graphic engine
- Display Type : Flat Panel and CRT displays up to 800 x 600 @ 24 bpp and 1024 x 768 @ 16 bpp

### Environmental and Power

- Power Requirements : +5 V @ 3.0 A (typical), ±12 V ; (with Embedded Intel Low Voltage Pentium III 500 MHz and 128MB SDRAM)
- CPU Power : onboard PWM switching power supply for autodetects CPU core voltage
- System Monitoring and Alarm : CPU and System temperature, system voltage
- Board Dimensions (LxW) : 203 x 146 mm (8" x 5.75"), EBX Form Factor
- Board Weight : 0.23 Kg.
- Operating Temperature : 0 to 60°C (32 to 140°F)

# Warning

Single Board Computers and Miniboards contain very delicate Integrated Circuits (IC). To protect these components against damage from static electricity, always follow the following precautions when handling them :

1. Disconnect your board 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 the board on a grounded antistatic pad or on the bag that came with the it, whenever it is separated from the system.
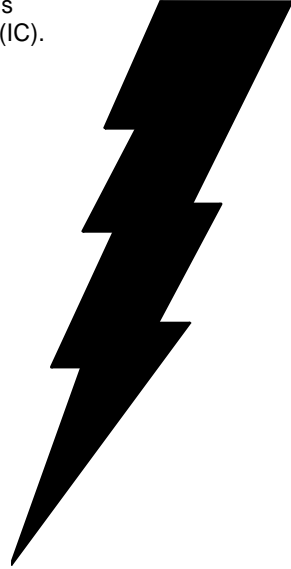
## Ordering Codes

3307157A :    5.25" EBX Embedded Intel Mobile Low Voltage Pentium-III 500MHz Littleboard with Onboard 128MB SDRAM, Flat Panel / CRT SVGA, Fast Ethernet, 3D Audio Interfaces, 16-bit GPIO, 4 Serial Ports and DiskOnChip Socket

3307157B :    same as above but with Intel Embedded Low Voltage Celeron 400 MHz CPU

## Product Image
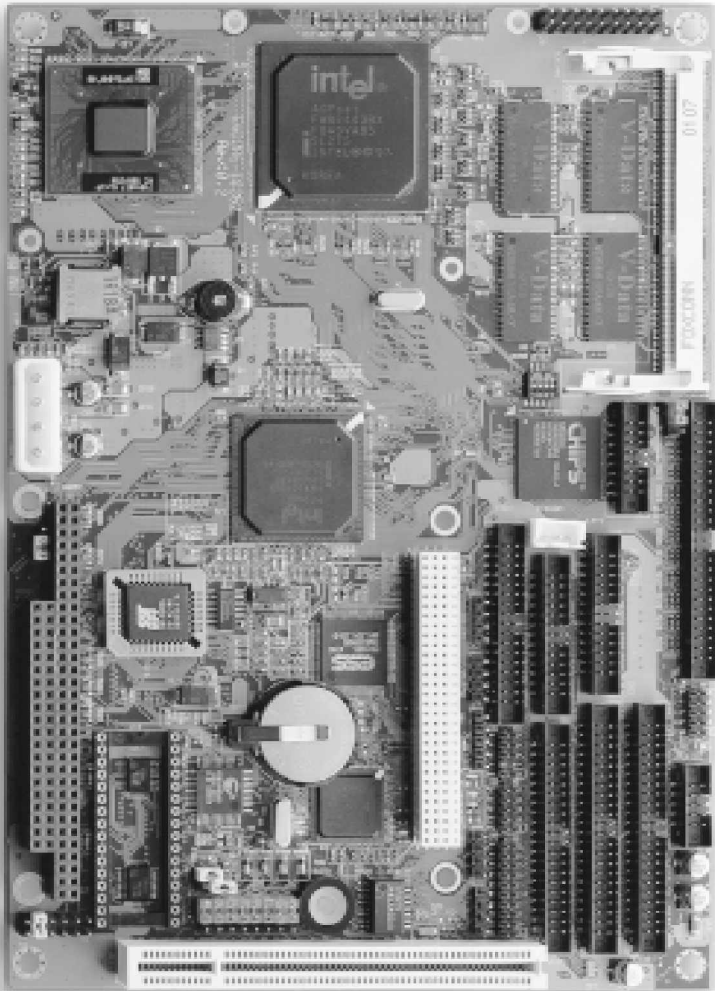
# Dimensions
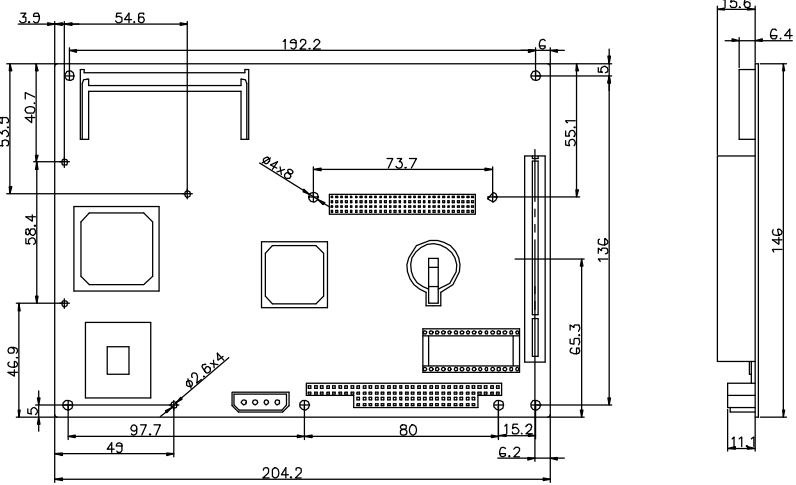


3307157 without passive cooling element
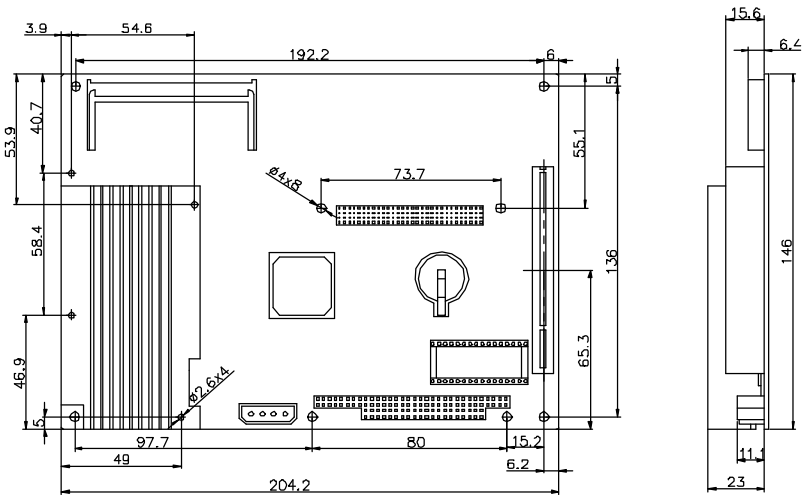


3307157 with passive cooling element

**BOARD LAYOUT FRONT**
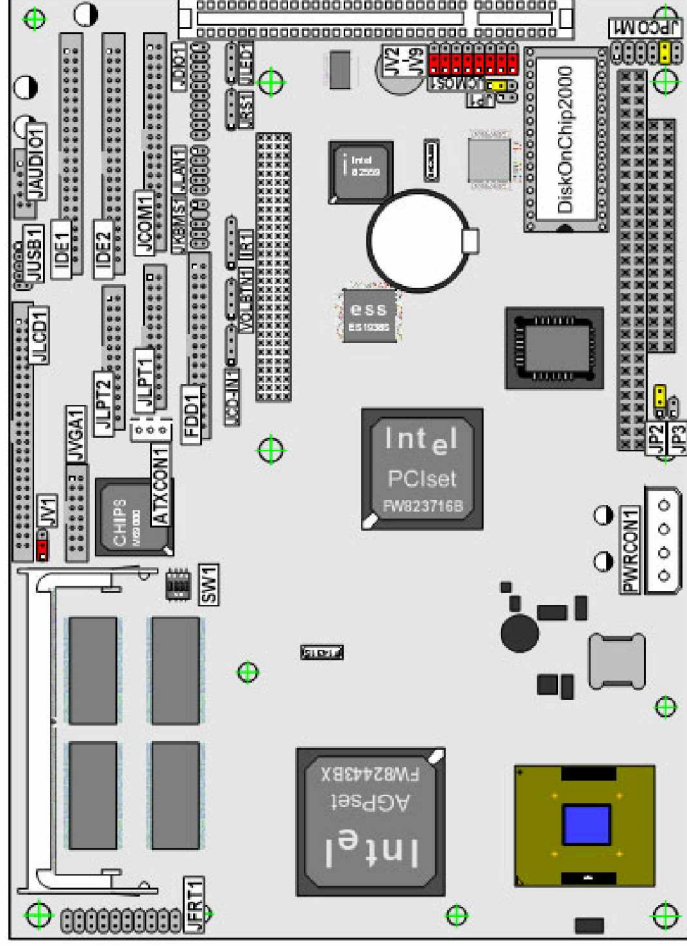
# Jumper/Connector Quick Reference

## *Jumpers*

JCMOS1    RTC/CMOS Operation
1-2    ->    Normal Operation
2-3    ->    Clear CMOS

JP1    DiskOnChip Base Address
on    ->    D0000h
off    ->    D8000h

JP2    Watchdog Active Mode
1-2    ->    IOCHK (NMI)
2-3    ->    RESET

JP3    FSB Speed
on    ->    66 Mhz of
f    ->    100 Mhz

JV1    LCD Voltage
1-2    ->    5 V
2-3    ->    3.3 V

JV2    COM1 Pin 1 Voltage
1-2    ->    Normal RS-232 spec
2-3    ->    5 V

JV3    COM1 Pin 9 Voltage
1-2    ->    Normal RS-232 spec
2-3    ->    12 V

JV4    COM2 Pin 1 Voltage
1-2    ->    Normal RS-232 spec
2-3    ->    5 V

JV5    COM2 Pin 9 Voltage
1-2    ->    Normal RS-232 spec
2-3    ->    12 V

JV2    COM3 Pin 1 Voltage
1-2    ->    Normal RS-232 spec
2-3    ->    5 V

JV3    COM3 Pin 9 Voltage
1-2    ->    Normal RS-232 spec
2-3    ->    12 V

JV4    COM4 Pin 1 Voltage
1-2    ->    Normal RS-232 spec
2-3    ->    5 V

JV5    COM4 Pin 9 Voltage
1-2    ->    Normal RS-232 spec
2-3    ->    12 V

## *Connectors*

| | |
|---|---|
| IDE1 | Primary IDE (44-pin) |
| IDE2 | Secondary IDE (44-pin) |
| FDD1 | FDD interface |
| JCOM1 | COM 1/2/3/4 (RS-232) |
| JLPT1 | Primary Parallel Port |
| JLPT2 | Secondary Parallel Port |
| JVGA1 | CRT SVGA |
| JKBMS1 | Keyboard/Mouse |
| JLAN1 | LAN 10/100 MBPS |
| JDIO1 | 16-bit Digital I/O |
| JUSB1 | Dual USB Port |
| JAUDIO1 | Audio Port |
| JLCD1 | Flat Panel |
| PWRCON1 | 4-pin Power Connector |
| IR1 | IrDA Header |
| ATXCON1 | ATX Power Control |
| JCD_IN1 | CD Audio In |
| SW1 | Flat Panel Type switch |

JPCOM1    COM2 Port Mode Options

| 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | Mode |
|---|---|---|---|---|---|---|
| off | off | off | off | on | off | Standard RS-232 |
| on | on | on | on | off | on | RS-485 |
| off | off | off | off | off | on | RS-422, TX/RX always enabled |
| on | off | off | off | off | on | RS-422, TX enabled by RTS |
| off | on | off | off | off | on | RS-422, RX enabled by RTS |
| on | on | off | off | off | on | RS-422, TX/RX enabled by RTS |

# CMOS Jumper Settings

## CMOS Operation(JCMOS1)

If the 3307157 refuses to boot due to inappropriate CMOS settings here is how to proceed to clear (reset) the CMOS to its default values

Connector:JCMOS1
Type:onboard 3-pin header
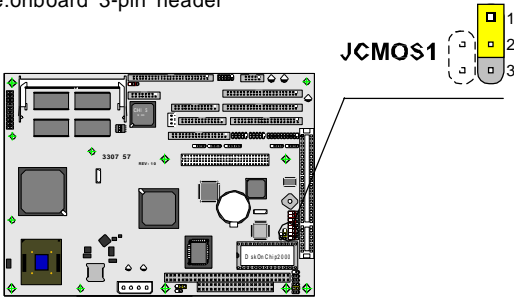


| Mode | JCMOS1 |
|------|--------|
| Normal Operation | 1-2 |
| Clear CMOS | 2-3 |
| default setting | |

# 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 writing I/O port 444H is sufficient. To disable the watchdog timer perform a read on port 44H.

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

## Mode Setting (JP2)

| Watchdog Mode | JP2 |
|---|---|
| RESET | 2-3 |
| I0CHK   (Active NMI) | 1-2 |
| Disable Watchdog timer | off |

default setting



**JP2**
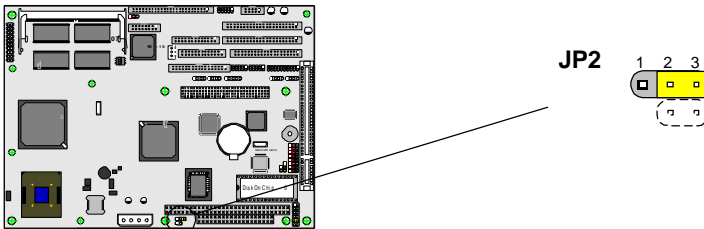
## Programmable Timeout Values

Timout values are programmed. The watchdog timer supports 127 steps. use the table on the next page to find the hexidecimal value that needs to be passed on to get the correct timer interval. Look subsequntly at the program example how to pass the value to the watchdog timer.

## Timeout Table

| Level | Value | Seconds | Level | Value | Seconds | Level | Value | Seconds |
|-------|-------|---------|-------|-------|---------|-------|-------|---------|
| 1 | 7Fh | 1 | 2 | 7Eh | 2 | 3 | 7Dh | 3 |
| 4 | 7Ch | 4 | 5 | 7Bh | 5 | 6 | 7Ah | 6 |
| 7 | 79h | 7 | 8 | 78h | 8 | 9 | 77h | 9 |
| 10 | 76h | 10 | 11 | 75h | 11 | 12 | 74h | 12 |
| 13 | 73h | 13 | 14 | 72h | 14 | 15 | 71h | 15 |
| 16 | 70h | 16 | 17 | 6Fh | 17 | 18 | 6Eh | 18 |
| 19 | 6Dh | 19 | 20 | 6Ch | 20 | 21 | 6Bh | 21 |
| 22 | 6Ah | 22 | 23 | 69h | 23 | 24 | 68h | 24 |
| 25 | 67h | 25 | 26 | 66h | 26 | 27 | 65h | 27 |
| 28 | 64h | 28 | 29 | 63h | 29 | 30 | 62h | 30 |
| 31 | 61h | 31 | 32 | 60h | 32 | 33 | 5Fh | 33 |
| 34 | 5Eh | 34 | 35 | 5Dh | 35 | 36 | 5Ch | 36 |
| 37 | 5Bh | 37 | 38 | 5Ah | 38 | 39 | 59h | 39 |
| 40 | 58h | 40 | 41 | 57h | 41 | 42 | 56h | 42 |
| 43 | 55h | 43 | 44 | 54h | 44 | 45 | 53h | 45 |
| 46 | 52h | 46 | 47 | 51h | 47 | 48 | 50h | 48 |
| 49 | 4Fh | 49 | 50 | 4Eh | 50 | 51 | 4Dh | 51 |
| 52 | 4Ch | 52 | 53 | 4Bh | 53 | 54 | 4Ah | 54 |
| 55 | 49h | 55 | 56 | 48h | 56 | 57 | 47h | 57 |
| 58 | 46h | 58 | 59 | 45h | 59 | 60 | 44h | 60 |
| 61 | 43h | 61 | 62 | 42h | 62 | 63 | 41h | 63 |
| 64 | 40h | 64 | 65 | 3Fh | 65 | 66 | 3Eh | 66 |
| 67 | 3Dh | 67 | 68 | 3Ch | 68 | 69 | 3Bh | 69 |
| 70 | 3Ah | 70 | 71 | 39h | 71 | 72 | 38h | 72 |
| 73 | 37h | 73 | 74 | 36h | 74 | 75 | 35h | 75 |
| 76 | 34h | 76 | 77 | 33h | 77 | 78 | 32h | 78 |
| 79 | 31h | 79 | 80 | 30h | 80 | 81 | 2Fh | 81 |
| 82 | 2Eh | 82 | 83 | 2Dh | 83 | 84 | 2Ch | 84 |
| 85 | 2Bh | 85 | 86 | 2Ah | 86 | 87 | 29h | 87 |
| 88 | 28h | 88 | 89 | 27h | 89 | 90 | 26h | 90 |
| 91 | 25h | 91 | 92 | 24h | 92 | 93 | 23h | 93 |
| 94 | 22h | 94 | 95 | 21h | 95 | 96 | 20h | 96 |
| 97 | 1Fh | 97 | 98 | 1Eh | 98 | 99 | 1Dh | 99 |
| 100 | 1Ch | 100 | 101 | 1Bh | 101 | 102 | 1Ah | 102 |
| 103 | 19h | 103 | 104 | 18h | 104 | 105 | 17h | 105 |
| 106 | 16h | 106 | 107 | 15h | 107 | 108 | 14h | 108 |
| 109 | 13h | 109 | 110 | 12h | 110 | 111 | 11h | 111 |
| 112 | 10h | 112 | 113 | 0Fh | 113 | 114 | 0Eh | 114 |
| 115 | 0Dh | 115 | 116 | 0Ch | 116 | 117 | 0Bh | 117 |
| 118 | 0Ah | 118 | 119 | 09h | 119 | 120 | 08h | 120 |
| 121 | 07h | 121 | 122 | 06h | 122 | 123 | 05h | 123 |
| 124 | 04h | 124 | 125 | 03h | 125 | 126 | 02h | 126 |
| 127 | 01h | 127 | | | | | | |

## Programming Example

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

```
WDT_EN_RF      equ    444h

WDT_DIS        equ    044h

WT_Enable      push AX              ; Save AX,DX
               push DX
               mov DX,WDT_EN_RF     ; Enable Timer
               mov AX,INTERVAL      ; Set Timeout Value
               out DX,AX
               pop DX               ; Restore DX,AX
               pop AX
               ret

WT_Refresh     push AX              ; Save AX,DX
               push DX
               mov DX,WDT_EN_RF     ; Refresh Timer
               mov AX,INTERVAL      ; Set Timout Value
               out DX,AX
               pop DX               ; Restore DX,AX
               pop AX
               ret

WT_Disable     push AX              ; Save AX,DX
               push DX
               mov DX,WDT_DIS       ; Disable Timer
               in AX,DX
               pop DX               ; Restore DX,AX
               pop AX
               ret

WT_Disable     push AX              ; save AX,DX
               push DX
               mov DX,WDT_DIS       ; Disable Timer
               in AX,DX
               pop DX               ; restore DX,AX
               pop AX
               ret
```

# DiskOnChip® 2000 Flash Disk

## Installation Instructions

1. Make sure the 3307157 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)
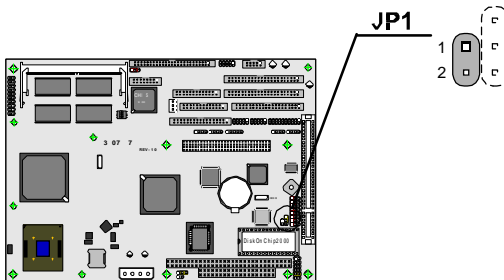


3. Set address

| Base Address | JP1 |
|---|---|
| D0000h | on |
| D8000h | 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

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

# Serial Port Configuration

## RS-232/422/485 Mode on COM2 (JCOM1)

The onboard COM2 port can be configured to operate in RS-485 mode or in four different RS-422 modes. RS-422 modes differ in the way RX/TX is being handled. Jumper JCOM1 determines between RS-232 or RS-422/485 and assigns the different RS-422 modes.

NOTE : in RS-232 mode     COM2 is assigned to onboard connector JCOM1
          in RS-422/485 mode   COM2 is assigned to onboard connector JRS1
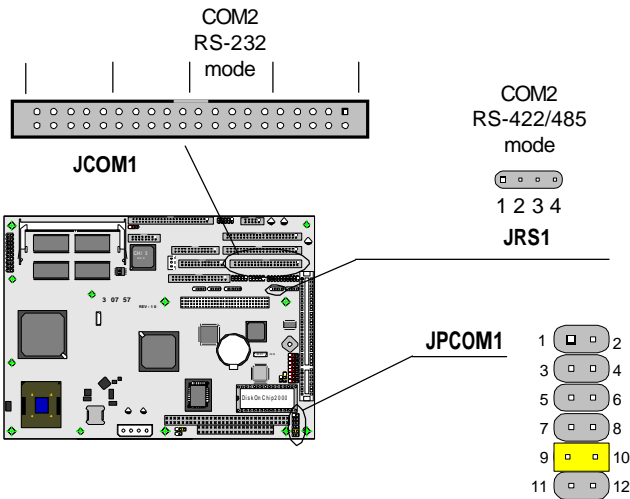


| COM2 Mode Selection (JPCOM1) | 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 |
|---|---|---|---|---|---|---|
| RS-232C | off | off | off | off | on | off |
| RS-485 | on | on | on | on | off | on |
| RS-422 TX/RX always enabl | off | off | off | off | off | on |
| RX enabl by RTS, TX always enabl | off | on | off | off | off | on |
| TX enabl by RTS, RX always enabl | on | off | off | off | off | on |
| TX/RX enabl by RTS | on | on | off | off | off | on |

default setting

## RS-232c Standard and POS Modes (JV2~JV9)

All onboard COM ports can be configured to operate in standard RS-232c mode or in POS (Point-of-Sale) RS-232c mode. POS devices normally need an additional power supply signal (5V or 12V) to be able to power the device (LCD, cash drawer or printer) without additional wiring.

There are three seperate POS modes :
- RS-232 with 5V on pin 1
- RS-232 with 12V on pin 9
- RS-232 with 5V on pin 1 and 12V on pin 9
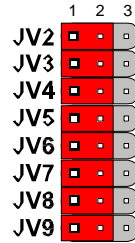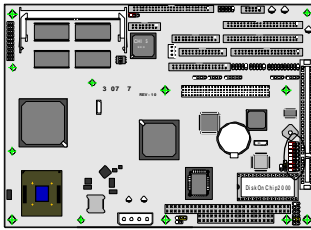


| COM1 RS-232 Mode | JV2 | JV3 |
|---|---|---|
| Standard | 1-2 | 1-2 |
| POS : 12 V on pin 9 | 1-2 | 2-3 |
| POS : 5 V on pin 1 | 2-3 | 1-2 |
| POS : 5 V on pin 1 and 12 V on pin 9 | 2-3 | 2-3 |

| COM2 RS-232 Mode | JV4 | JV5 |
|---|---|---|
| Standard | 1-2 | 1-2 |
| POS : 12 V on pin 9 | 1-2 | 2-3 |
| POS : 5 V on pin 1 | 2-3 | 1-2 |
| POS : 5 V on pin 1 and 12 V on pin 9 | 2-3 | 2-3 |

| COM3 RS-232 Mode | JV6 | JV7 |
|---|---|---|
| Standard | 1-2 | 1-2 |
| POS : 12 V on pin 9 | 1-2 | 2-3 |
| POS : 5 V on pin 1 | 2-3 | 1-2 |
| POS : 5 V on pin 1 and 12 V on pin 9 | 2-3 | 2-3 |

| COM4 RS-232 Mode | JV8 | JV9 |
|---|---|---|
| Standard | 1-2 | 1-2 |
| POS : 12 V on pin 9 | 1-2 | 2-3 |
| POS : 5 V on pin 1 | 2-3 | 1-2 |
| POS : 5 V on pin 1 and 12 V on pin 9 | 2-3 | 2-3 |

default setting

# Audio Volume Control

## Volume Control by external push button

Besides volume control from within your software application the 3307157 supports hardware based volume control. Volume level can be increased up or decreased by shorting either pin 1-2 or pin 3-4 of onboard header VOLBTN1

Connector : VOLBTN1
Type:onboard 4-pin header
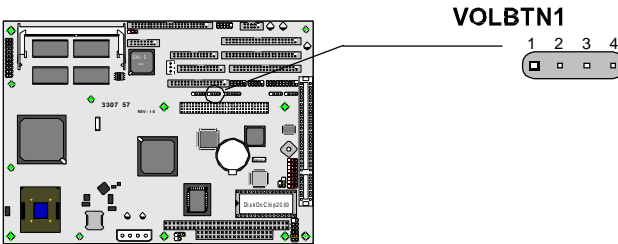


| Action | Result |
|--------|--------|
| Short pin 1-2 | Volume level increases |
| Short pin 3-4 | Volume level decreases |

# Power Connectors

## Power Connectors (PWRCON1)

Connector : PWRCON1
Type : 4-pin onboard AT Connetor

| Pin | Description | wire color |
|-----|-------------|------------|
| 1 | +12V | yellow |
| 2 | GND | black |
| 3 | GND | black |
| 4 | +5V | red |
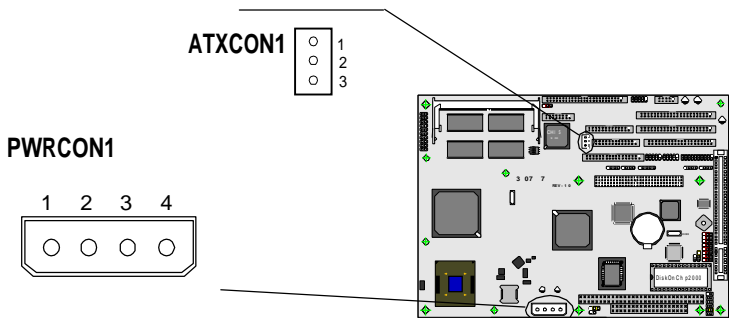


## ATX power control (ATXCON1)

Connector : ATXCON1
Type : 3-pin onboard Wafer connector

| Pin | Description |
|-----|-------------|
| 1 | PS-ON |
| 2 | GND |
| 3 | 5V SB(Standby) |

# Switches and Indicators



## JFRT1

| | | |
|---|---|---|
| **Power Switch** | PWRBT ⊙ ⊙ GND | |
| **Reset Switch** | RESET ⊙ ⊙ GND | |
| **SMI Switch** | SMI ⊙ ⊙ GND | |
| **HDD LED** | (+) Vcc ⊙ ⊙ Active | |

| | | |
|---|---|---|
| | ⊙ ⊙ | |
| | ⊙ ⊙ | |
| | (+)Vcc ⊙ ⊙ | |
| **Speaker** | NO ⊙ ⊙ | (+)Vcc  **Speaker** |
| | NO ⊙ ⊙ | NC GND |
| | SPKN ⊙ ⊙ | |
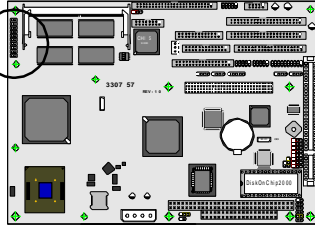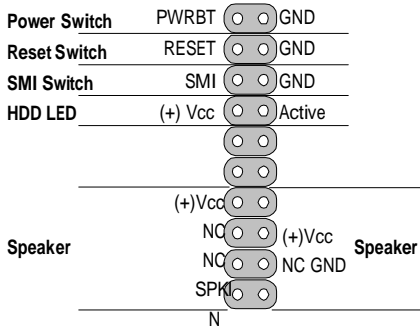
# Interface Connectors HDD, FDD

## Floppy Disk Drive (FDD1)

Connector : FDD1
Type : Onboard 34-pin header

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

## Enhanced IDE  Connector (IDE1/IDE2)

```
43 □ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 □   1
44 □ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0   2
```

44-pin (2.0 pitch) box header for 2.5" (laptop-size) HDD/Flash IDE drive
includinging power signals

Connectors : IDE1/IDE2
Type : onboard 44-pin box header, secondary IDE

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | RESET | 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 | N/C |
| 21 | REQ | 22 | GND |
| 23 | IOW-/STOP | 24 | GND |
| 25 | IOR-/HDMARDY | 26 | GND |
| 27 | IORDY/DDMARDY | 28 | IDESEL |
| 29 | DACK- | 30 | GND |
| 31 | IRQ | 32 | N/C |
| 33 | A1 | 34 | CBLID |
| 35 | A0 | 36 | A2 |
| 37 | CS0(MASTER CS) | 38 | CS1(SLAVE CS) |
| 39 | LED ACT- | 40 | GND |
| 41 | Vcc | 42 | Vcc |
| 43 | GND | 44 | GND |

## Peripheral Ports

### Parallel Port (JLPT1, JLPT2)

Connector : JLPT1 / JLPT2
Type : Onboard 26-pin headers
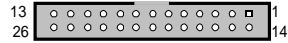
| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | STROBE- | 14 | AUTO FEED- |
| 2 | DATA0 | 15 | ERROR- |
| 3 | DATA1 | 16 | INITIALIZE- |
| 4 | DATA2 | 17 | SELECT INPUT- |
| 5 | DATA3 | 18 | GND |
| 6 | DATA4 | 19 | GND |
| 7 | DATA5 | 20 | GND |
| 8 | DATA6 | 21 | GND |
| 9 | DATA7 | 22 | GND |
| 10 | ACKNOWLEDGE- | 23 | GND |
| 11 | BUSY | 24 | GND |
| 12 | PAPER EMPTY | 25 | GND |
| 13 | SELECT+ | 26 | N/C |

### Dual USB Port (JUSB1)

Connector: JUSB1
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 |

### IrDA (IR1)

Connector : IR1
Type : onboard 5-pin header

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

## Onboard RS-232 Serial Ports (JCOM1)

```
39  o o o o o o o o o o o o o o o o o o o ▫  1
40  o o o o o o o o o o o o o o o o o o o o  2
```

Connector : JCOM1 (COM1, COM2, COM3, COM4)
Type : onboard 40-pin boxheader

| COM1 | Pin | Description | Pin | Description |
|------|-----|-------------|-----|-------------|
|      | 1   | DCD         | 2   | RXD         |
|      | 3   | TXD         | 4   | DTR         |
|      | 5   | GND         | 6   | DSR         |
|      | 7   | RTS         | 8   | CTS         |
|      | 9   | RI          | 10  | N/C         |
| COM2 |     |             |     |             |
|      | 11  | DCD         | 12  | RXD         |
|      | 13  | TXD         | 14  | DTR         |
|      | 15  | GND         | 16  | DSR         |
|      | 17  | RTS         | 18  | CTS         |
|      | 19  | RI          | 20  | N/C         |
| COM3 |     |             |     |             |
|      | 21  | DCD         | 22  | RXD         |
|      | 23  | TXD         | 24  | DTR         |
|      | 25  | GND         | 26  | DSR         |
|      | 27  | RTS         | 28  | CTS         |
|      | 29  | RI          | 30  | N/C         |
| COM4 |     |             |     |             |
|      | 31  | DCD         | 32  | RXD         |
|      | 33  | TXD         | 34  | DTR         |
|      | 35  | GND         | 36  | DSR         |
|      | 37  | RTS         | 38  | CTS         |
|      | 39  | RI          | 40  | N/C         |

## COM2 Port in RS-422/485 mode (JRS1)

Connector : JRS1
Type : onboard 4-pin header (COM2)

```
(▫ o o o)
 1 2 3 4
```

| COM2 | Pin | RS-422 mode | RS-485 mode |
|------|-----|-------------|-------------|
|      | 1   | TXD+        | RTXD+       |
|      | 2   | TXD-        | RTXD-       |
|      | 3   | RXD+        | RTXD+       |
|      | 4   | RXD-        | RTXD-       |

## Flat Panel VGA (JLCD1)
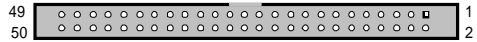
Connector : JLCD1
Type : Onboard 50-pin box header

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | +12V | 2 | +12V |
| 3 | GND | 4 | GND |
| 5 | VCC_LCD | 6 | ENAVDD |
| 7 | ENAVEE | 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 |

## CRT SVGA (JVGA1)

Connector : JVGA1
Type : onboard 16-pin header

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | RED | 2 | GREEN |
| 3 | BLUE | 4 | N/C |
| 5 | GROUND | 6 | GROUND |
| 7 | GROUND | 8 | GROUND |
| 9 | N/C | 10 | GROUND |
| 11 | N/C | 12 | VDDAT |
| 13 | HSYNC | 14 | VSYNC |
| 15 | VDCCLK | 16 | N/C |

## Keyboard (JKBMS1)

Connector : JKBMS1
Type : Onboard 10-pin header

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | KB-DATA | 2 | MS-DATA |
| 3 | N/C | 4 | NC |
| 5 | GND | 6 | GND |
| 7 | Vcc | 8 | Vcc |
| 9 | KB-CLK | 10 | MS-CLK |

## Audio Interface Port (JAUDIO1)

Connector : JAUDIO1
Type : onboard 10-pin header

9 7 5 3 1
10 8 6 4 2

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | LINE RIGHT | 2 | LINE LEFT |
| 3 | GND | 4 | GND |
| 5 | MIC | 6 | NC |
| 7 | GND | 8 | GND |
| 9 | SPEAKER LEFT | 10 | SPEAKER RIGHT |

## CDROM audio interface (JCD_IN1)

Connector : JCD_IN1
Type : onboard 4-pin boxheader

1 2 3 4

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | CD Left | 2 | GND |
| 3 | GND | 4 | CD Right |

## 16-bit General Purpose I/O (JDIO1)

Connector : JDIO1
Type : Onboard 20-pin header

19 [oooooooooo] 1
20 [oooooooooo] 2

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | DO0 | 2 | DO1 |
| 3 | DO2 | 4 | DO3 |
| 5 | DO4 | 6 | DO5 |
| 7 | DO6 | 8 | DO7 |
| 9 | GND | 10 | GND |
| 11 | DI0 | 12 | DI1 |
| 13 | DI2 | 14 | DI3 |
| 15 | DI4 | 16 | DI5 |
| 17 | DI6 | 18 | DI7 |
| 19 | +5V | 20 | +12V |

InPort : Use the I/O port 200 (Pin 11 ~ Pin 18)
OutPort: Use the I/O port 208 ( Pin 1 ~ Pin 8)
Example for debug:

 -o 208 ff (write ff to port 208) ....(Pin 1 ~ Pin 8)

 -i 200 (read the value from port 200) .....(Pin 11 ~ Pin 18)

## LAN Port Signals (JLAN1)

Connector : JLAN1
Type : Onboard 10-pin header

9 7 5 3 1
[ooooo]
10 8 6 4 2

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1 | TX+ | 2 | TX- |
| 3 | RX+ | 4 | N/C |
| 5 | N/C | 6 | RX- |
| 7 | N/C | 8 | N/C |
| 9 | GND | 10 | GND |

## LAN LED Connector (JLED1)

Connector: JLED1

[o o o o]
1 2 3 4

2 ——|<|—— Link (on) activity flash

3 ——|<|—— 4   100 (on) / 10 (0ff)
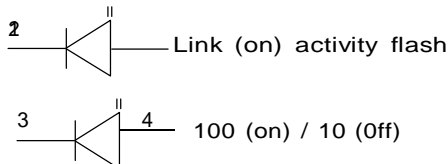
# System Resources

## Interrupt Assignment

| IRQ Address | Description |
|---|---|
| 0 | System Timer |
| 1 | Keyboard (KB output buffer full) |
| 2 | Programmable Interrupt Controller |
| 3 | Serial Port 2 & 3 |
| 4 | Serial Port 1 & 4 |
| 5 | Parallel Port 2 |
| 6 | Floppy controller |
| 7 | Parallel Port 1 |
| 8 | Real-Time Clock |
| 9 | AudioDrive & Software Redirected IRQ2 |
| 10 | Chips and Tech. 69000 PCI |
| 11 | LAN & USB |
| 12 | PS/2 Compatible Mouse Port |
| 13 | Numeric data processor |
| 14 | Primary IDE Controller |
| 15 | Secondary IDE Controller |

## I/O Adress Mapping

| I/O Adress | Description Notes |
|---|---|
| 0000-000F | Direct memory access controller |
| 0020-0021 | PIC |
| 0040-0043 | System timer |
| 0061-0061 | Keyboard |
| 0064-0064 | System speaker |
| 0060-0060 | Keyboard |
| 0070-0071 | System CMOS / real time clock |
| 0081-0083 | Direct memory access controller |
| 0087-0087 | Direct memory access controller |
| 0089-008B | Direct memory access controller |
| 008F-0091 | Direct memory access controller |
| 00A0-00A1 | PIC |
| 00C0-00DF | Direct memory access controller |

| I/O address | Description Notes |
|---|---|
| 00F0-00FF | Numeric data processor |
| 0170-0177 | Intel 82371AB/EB PCI Bus Master IDE Controller |
| 0170-0177 | Secondary IDE controller |
| 01F0-01F7 | Intel 82371AB/EB PCI Bus Master IDE Controller |
| 01F0-01F7 | Primary IDE controller |
| 0200-0203 | Gameport Joystick |
| 0220-022F | ESS SOLO-1 DOS Emulation |
| 0278-027F | Printer Port |
| 0294-0297 | PCI bus |
| 02E8-02EF | Serial Port (COM 4) |
| 02E8-02FF | Serial Port (COM 2) |
| 0330-0331 | ESS SOLO-1 DOS Emulation |
| 0376-0376 | Intel 82371AB/EB PCI Bus Master IDE Controller |
| 0376-0376 | Secondary IDE controller |
| 0378-037F | Printer Port |
| 0388-038B | ESS SOLO-1 DOS Emulation |
| 03B0-03BB | Chips & Tech. 69000 PCI |
| 03C0-03DF | Chips & Tech. 69000 PCI |
| 03E8-03EF | Serial Port (COM 3) |
| 03F2-03F5 | Standard Floopy Disk Controller |
| 03F6-03F6 | Intel 82371AB/EB PCI Bus Master IDE Controller |
| 03F6-03F6 | Primary IDE controller |
| 03F8-03FF | Serial Port (COM1) |
| 04D0-04D1 | PCI bus |
| 0CF8-0CFF | PCI bus |
| 4000-403F | PCI bus |
| 5000-501F | PCI bus |
| D000-D01F | Intel 82371AB/EB PCI Bus Master IDE Controller |
| D400-D43F | ESS SOLO-1 PCI AudioDrive |
| D800-D80F | ESS SOLO-1 PCI AudioDrive |
| DC00-DC0F | ESS SOLO-1 PCI AudioDrive |
| E000-E003 | ESS SOLO-1 PCI AudioDrive |
| E400-E403 | ESS SOLO-1 PCI AudioDrive |
| E800-E83F | Intel 8255x-based PCI Ethernet Adapter (10/100) |
| F000-F007 | Primary IDE controller |
| F000-F00F | Intel 82371AB/EB PCI Bus Master IDE Controller |
| F008-F00F | Secondary IDE controller |

# C&T 69000 Flat Panel Controller

3307157CL only ! The
69000 is the first member of CHIPS's HiQVideo family to integrate high speed
SDRAM frame buffer memory into the chip. Using leading edge embedded
memory logic technologies, the 69000 integrates 2 MBytes of SDRAM into the
chip. By embedding SDRAM and graphics controller logic on the same die, the
69000 delivers uncompromised performance and at the
same time consumes much less power than the discrete solution.

The integrated SDRAM supports up to 83 MHz operation, which provides up
to 664MBytes/second frame buffer bandwidth. The increase in the frame
buffer bandwidth enables the 69000 to support high color, high-resolution
graphics modes and real-time video acceleration.

*Supported Display Modes :*

| Resolution | Colors | Refresh Rate |
|------------|--------|--------------|
| 1280x1024 | 8bpp | 60 Hz |
| 1024x768 | 16bpp | 60,75,85 Hz |
| 800x600 | 24bpp | 60,75,85 Hz |
| 640x480 | 24bpp | 60,75,85 Hz |

## Flat Panel Type Switch

The 3307157 's provides a hardware switch to configure your onboard VGA controller for usage with a variety of flat panel types.
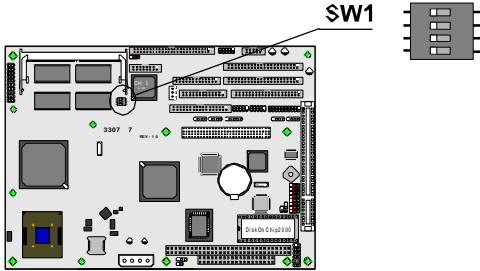


Switch : SW1
Type : onboard 3-pin header

| Panel Type | SW-1 | SW-2 | SW-3 | SW-4 |
|---|---|---|---|---|
| 1024x768 Dual Scan STN Color Panel | on | on | on | on |
| 1280x1024 TFT Color Panel | off | on | on | on |
| 640x480 Dual Scan STN Color Panel | on | off | on | on |
| 800x600 Dual Scan STN Color Panel | off | off | on | on |
| 640x480 Sharp TFT Color Panel | on | on | off | on |
| 640x480 18-bit TFT Color Panel | off | on | off | on |
| 1024x768 TFT Color Panel | on | off | off | on |
| 800x600 TFT Color Panel | off | off | off | on |
| 800x600 TFT Color Panel (Large BIOS) | on | on | on | off |
| 800x600 TFT Color Panel (Large BIOS) | off | on | on | off |
| 800x600 Dual Scan STN Color Panel (Large BIOS) | on | off | on | off |
| 800x600 Dual Scan STN Color Panel (Large BIOS) | off | off | on | off |
| 1024x768 TFT  Color Panel (Large BIOS) | on | on | off | off |
| 1280x1024 Dual Scan STN Color Panel (Large BIOS) | off | on | off | off |
| 1024x600 Dual Scan STN Color Panel (Large BIOS) | on | off | off | off |
| 1024x600 TFT Color Panel (Large BIOS) | off | off | off | off |

## Flat Panel Connector Power Setting

The 3307157 's Vcc is configurable as either +3.3 or +5.0 Volt by jumper setting (JV1)

| | | | |
|---|---|---|---|
| +12 V | 1 | 2 | +12 V |
| GND | 3 | 4 | GNDV |
| $V_{CC}$ | 5 | 6 | ENA $V_{DD}$ |
| $FPV_{EE}$ | 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 |

## LCD Voltage Selection (JV1)



JV1  1 2 3
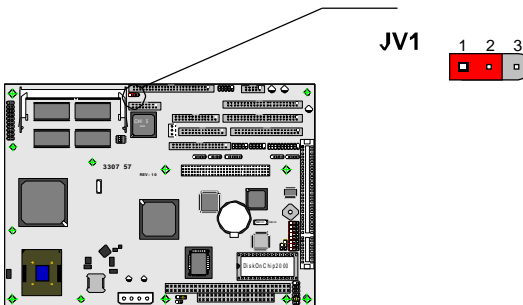
Connector : JV1
Type : onboard 3-pin header

| Vcc | JV1 |
|---|---|
| +3.3 | 2-3 |
| +5.0 | 1-2 |

default setting

## PLANAR EL640.480-AA1

Display type : 640 x 480 EL Mono

| EL 640.480-AA1/ 34-pin 2.54 pitch / housing | | 3307157 / 50-pin 2.0 pitch / housing | |
|---|---|---|---|
| Pin | Description | Pin | Description |
| 1 | GND | 39 | GND |
| 2 | D0 | 21 | PD12 |
| 3 | GND | 39 | GND |
| 4 | D1 | 22 | PD13 |
| 5 | GND | 39 | GND |
| 6 | D2 | 23 | PD14 |
| 7 | N/C | | |
| 8 | D3 | 24 | PD15 |
| 9 | N/C | | |
| 10 | Reserved | | |
| 11 | N/C | | |
| 12 | Reserved | | |
| 13 | N/C | | |
| 14 | Reserved | | |
| 15 | GND | 39 | GND |
| 16 | Reserved | | |
| 17 | GND | 3 | GND |
| 18 | VCLK | 35 | SHFCLK |
| 19 | GND | 3 | GND |
| 20 | _BLANK | 40 | ENABKL |
| 21 | GND | 3 | GND |
| 22 | HS | 38 | LP |
| 23 | N/C | | |
| 24 | VS | 36 | FLM |
| 25 | N/C | | |
| 26 | N/C | | |
| 27 | N/C | | |
| 28 | ENABLE | 6 | PVCC |
| 29 | VMODE | | |
| 30 | N/C | | |
| 31 | N/C | | |
| 32 | N/C | | |
| 33 | Reserved | | |
| 34 | Reserved | | |
| J2(1) | +12Vdc | 1 | +12V |
| J2(2) | GND | 4 | GND |
| J2(3) | GND | 4 | GND |
| J2(4) | +5Vdc | 5 | VCC |
| J3(1) | LUM | 5 | VCC |
| J3(2) | GND | 4 | GND |

## KYOCERA KCB104VG2BA-A01

Display type : 640 x 480 16-bit Color STN

| KCB104VG2BA-A01 Molex 53261-1510 | | 3307157 / 50-pin 2.0 pitch / housing | |
|---|---|---|---|
| Pin | Description | Pin | Description |
| 1 | FLM | 36 | FLM |
| 2 | NC | --- | --- |
| 3 | DISP | 40 | ENABKL |
| 4 | LOAD | 38 | LP |
| 5 | VSS | 39 | GND |
| 6 | CP | 35 | SHFCLK |
| 7 | VSS | 39 | GND |
| 8 | HD0 | 20 | P11 |
| 9 | HD1 | 19 | P10 |
| 10 | HD2 | 18 | P9 |
| 11 | HD3 | 17 | P8 |
| 12 | HD4 | 12 | P3 |
| 13 | HD5 | 11 | P2 |
| 14 | HD6 | 10 | P1 |
| 15 | HD7 | 9 | P0 |

| KCB104VG2BA-A01 Molex 53261-1410 | | 3307157 / 50-pin 2.0 pitch / housing | |
|---|---|---|---|
| Pin | Description | Pin | Description |
| 1 | LD0 | 24 | P15 |
| 2 | LD1 | 23 | P14 |
| 3 | LD2 | 22 | P13 |
| 4 | LD3 | 21 | P12 |
| 5 | LD4 | 16 | P7 |
| 6 | LD5 | 15 | P6 |
| 7 | LD6 | 14 | P5 |
| 8 | LD7 | 13 | P4 |
| 9 | VDD | 5 | +5V |
| 10 | VSS | 3 | GND |
| 11 | NC | --- | --- |
| 12 | NC | --- | --- |
| 13 | NC | --- | --- |
| 14 | VCONT | --- | +0.8~+2.8V |

## SHARP LQ12S41

Display type : 800 x 600 18-bit Color TFT

| LQ12S41 DF9X-41S-1V/Hirose | | 3307157 / 50-pin 2.0 pitch / housing | |
|---|---|---|---|
| Pin | Description | Pin | Description |
| 1 | GND | 39 | GND |
| 2 | CLK | 35 | SHFCLK |
| 3 | GND | 39 | GND |
| 4 | Hsync | 38 | LP |
| 5 | Vsync | 36 | FLM |
| 6 | GND | 39 | GND |
| 7 | GND | 39 | GND |
| 8 | GND | 39 | 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 | 3 | GND |
| 33 | B3 | 14 | P5 |
| 34 | B4 | 15 | P6 |
| 35 | B5 | 16 | P7 |
| 36 | GND | 3 | GND |
| 37 | DE | 37 | M |
| 38 | R/L | --- | --- |
| 39 | VCC | 5 | +3.3V |
| 40 | VCC | 5 | +3.3V |
| 41 | U/P | --- | --- |

# HITACHI LMG9211XUCC

Display type : 640 x 480 16-bit Color STN

| LMG9211XUCC Molex 53261-1510 | | 3307157 / 50-pin 2.0 pitch / housing | |
|---|---|---|---|
| **Pin** | **Description** | **Pin** | **Description** |
| 1 | FLM | 36 | FLM |
| 2 | NC | --- | --- |
| 3 | DISP·OFF | 40 | ENABKL |
| 4 | LOAD | 38 | LP |
| 5 | VSS | 39 | GND |
| 6 | CP | 35 | SHFCLK |
| 7 | VSS | 39 | GND |
| 8 | UD0 | 20 | P11 |
| 9 | UD1 | 19 | P10 |
| 10 | UD2 | 18 | P9 |
| 11 | UD3 | 17 | P8 |
| 12 | UD4 | 12 | P3 |
| 13 | UD5 | 11 | P2 |
| 14 | UD6 | 10 | P1 |
| 15 | UD7 | 9 | P0 |

| LMG9211XUCC Molex 53261-1410 | | 3307157 / 50-pin 2.0 pitch / housing | |
|---|---|---|---|
| **Pin** | **Description** | **Pin** | **Description** |
| 1 | LD0 | 24 | P15 |
| 2 | LD1 | 23 | P14 |
| 3 | LD2 | 22 | P13 |
| 4 | LD3 | 21 | P12 |
| 5 | LD4 | 16 | P7 |
| 6 | LD5 | 15 | P6 |
| 7 | LD6 | 14 | P5 |
| 8 | LD7 | 13 | P4 |
| 9 | VDD | 5 | +5V |
| 10 | VSS | 3 | GND |
| 11 | VSS | 3 | GND |
| 12 | VEE | --- | +27V |
| 13 | VEE | --- | +27V |
| 14 | V0 | --- | +27V |

## NAN YA LTBSHT024GC

Display type : 640 x 480 8-bit Mono STN

| LTBSHT024GC Molex 53261-1590 | | 3307157 / 50-pin 2.0 pitch / housing | |
|---|---|---|---|
| Pin | Description | Pin | Description |
| 1 | FLM | 36 | FLM |
| 2 | LOAD | 38 | LP |
| 3 | CP | 35 | SHFCLK |
| 4 | D.OFF | 40 | ENABKL |
| 5 | VDD | 5 | VCC |
| 6 | VSS | 39 | GND |
| 7 | VEE | -- | -17V |
| 8 | DU0 | 12 | P3 |
| 9 | DU1 | 11 | P2 |
| 10 | DU2 | 10 | P1 |
| 11 | DU3 | 9 | P0 |
| 12 | DL0 | 16 | P7 |
| 13 | DL1 | 15 | P6 |
| 14 | DL2 | 14 | P5 |
| 15 | DL3 | 13 | P4 |

# TORISAN MXS121022010

Display type : 800 x 600 18-bit Color TFT

| MXS121022010 DF9X-41S-1V/Hirose | | 3307157 / 50-pin 2.0 pitch / housing | |
|-----|-----|-----|-----|
| **Pin** | **Description** | **Pin** | **Description** |
| 1 | GND | 3 | GND |
| 2 | DCLK | 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 | TEST | 39 | GND |
| 39 | VCC | 5 | +3.3V |
| 40 | VCC | 5 | +3.3V |
| 41 | MODE | --- | --- |

## NEC NL8060AC26-04

Display type : 800 x 600 18-bit Color TFT

| NL8060AC26-04 DF9X-41S-1V/Hirose | | 3307157 / 50-pin 2.0 pitch / housing | |
|---|---|---|---|
| Pin | Description | Pin | Description |
| 1 | GND | 39 | GND |
| 2 | CLK | 35 | SHFCLK |
| 3 | GND | 39 | GND |
| 4 | Hsync | 38 | LP |
| 5 | Vsync | 36 | FLM |
| 6 | GND | 39 | GND |
| 7 | GND | 39 | GND |
| 8 | GND | 39 | 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 | 3 | GND |
| 33 | B3 | 14 | P5 |
| 34 | B4 | 15 | P6 |
| 35 | B5 | 16 | P7 |
| 36 | GND | 3 | GND |
| 37 | DE | 37 | M |
| 38 | VCC | 5 | +3.3V/+5V |
| 39 | VCC | 5 | +3.3V/+5V |
| 40 | VCC | 5 | +3.3V/+5V |
| 41 | MODE | --- | --- |

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# AWARD BIOS Setup

The 3307157 uses the Award PCI/ISA BIOS for the system configura- tion. The Award BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options which could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

To access AWARD PCI/ISA BIOS Setup program, press <Del> key. The Main Menu will be displayed at this time.

```
                        ROM PCI/ISA BIOS (2A69JD29)
                           CMOS SETUP UTILITY AWARD
                           SOFTWARE, INC.

 ┌─────────────────────────────────────────────────────────────────────┐
 │ STANDARD CMOS SETUP          │ PC Health Status                       │
 │ BIOS FEATURES SETUP          │ FREQUENCY/VOLTAGE CONTROL              │
 │ Advanced CHIPSET FEATURES    │ LOAD OPTIMIZED DEFAULT                 │
 │ INTEGRATED PERIPHERALS       │ SET PASSWORD                          │
 │ POWER MANAGEMENT SETUP       │ SAVE & EXIT SETUP                      │
 │ PNP/PCI CONFIGURATION        │ EXIT WITOUT SAVE                       │
 │                              │                                        │
 │                              │                                        │
 │                              │                                        │
 │                              │                                        │
 ├─────────────────────────────────────────────────────────────────────┤
 │ Esc: Quit          ↑↓→←    : Select Item   PU/PD/+/- : Modify        │
 │ F1 : Help          (Shift)F2 : Change Color                          │
 ├─────────────────────────────────────────────────────────────────────┤
 │                    Time, Date, Hard Disk Type                         │
 │                                                                       │
 └─────────────────────────────────────────────────────────────────────┘
```

Once you enter the AwardBIOS CMOS Setup UTILITY, the Main Menu will appear on the screen. the Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

## Standard CMOS Setup

```
                    ROM PCI/ISA BIOS (2A69JD29)
                        STANDARD CMOS SETUP
                        AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Fri, 21,    ,

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 : 31744K
                                     Other Memory :    384K
Video   : EGA / VGA
Halt On : All, But Keyboard           Total Memory : 32768K

Esc: Quit                 ↑↓→←  : Select Item   PU/PD/+/  : Modify
 F1 : 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 DECTECTION 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.

| | | |
|---|---|---|
| None : | No diskette drive installed | |
| 360K : | 5.25 in5-1/4 inch PC-type standard drive | |
| 1.2M : | 5.25 in5-1/4 inch AT-type high-density drive | |
| 720K : | 3.5 in3-1/2 inch double-sided drive | |
| 1.44M : | 3.5 in3-1/2 inch double-sided drive | |
| 2.88M : | 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 (2A69JD29)
              STANDARD CMOS SETUP
            AWARD SOFTWARE, INC.

Virus Warning             :   Disable  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
Processor Number Feature  :   Enabled  D4000-D7FFF Shadow   : Disabled
Quick Power On Self Test  :   Disabled D8000-DBFFF Shadow   : Disabled
First Boot Device         : HDD-0      DC000-DFFFF Shadow   : Disabled
Second Boot Device        : HDD-1      SMALL LOGO(EPA) SHOW  : Enabled
Third Boot Device         : LS120
Boot Others Device        :   Enabled
Swap Floppy Drive         :   Disabled
Boot Up Floppy Seek       :   Enabled
Boot Up NumLock Status    : On
Gate A20 Option           : Normal
Typematic Rate Setting    : Disabled  Esc: Quit    ↑↓→←   : Select Item
Typematic Rate (Char/Sec) : 6         F1 : Help    PU/PD/+/-  : Modify
Typematic Delay (Msec)    : 250       F5 : Old Values (Shift)F2: Color
Security Option           : Setup     F6 : Load BIOS Defaults
OS Select for DRAM > 64MB  : Non-OS2   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.

**Processor Number Feature**
This feature appears when a Pentium III porcessor is installed. It enables you to control whether the Pentium III's serial number can be read by external rograms.

### 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.

### First/Second/Third Boot Device

The computers usually load the operating system from the hard drive, and may even load it from a CD-ROM drive. The optional choice sequence as Disable/Floppy/LS120/HDD-0/SCSI/CDROM/HDD-1/HDD-2/HDD-3/ZIP100

### Boot Other Device

This field is effective only in ........

### 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.

### 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.

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.

Report No FDD For WIN 95
Select Yes to release IRQ6 when the system contains no floppy drive, for compatibility with Windows 95 logo certification. In the "Integrated Peripherals" menu screen, select Disabled for the Onboard FDC Controller field.

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 C0000~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.

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 C0000~C7FFF area of memory between 640 KB and 1 MB is used).

# Chipset Features Setup

```
                    ROM PCI/ISA BIOS (2A69KTPC)
                       CHIPSET FEATURES SETUP
                       AWARD SOFTWARE, INC.

 Auto Configuration       : Enabled
 EDO DRAM Speed Selection : 60ns EDO
 CASx# MA Wait State      :  2
 EDO RASx# Wait State     :  2
 SDRAM RAS-to-CAS Delay   : [3]
 SDRAM RAS Percharge Time : [3]
 SDRAM CAS Latency Time   : [3]
 SDRAM Precharge Control  : Disabled

 System BIOS Cacheable    :  Enabled
 Video BIOS Cacheable     :  Enabled
 Video RAM Cacheable      : Enabled
 8 Bit I/O Recovery Time  : [1]
 16 Bit I/O Recovery Time : [2] Memory
 Hole At 15M-16M          : Disabled    Esc: Quit    ↑↓→←   : Select Item
 Passive Release          : Enabled     F1 : Help     PU/PD/+/-  : Modify
 Delayed Transaction      : Disabled    F5 : Old Values (Shift)F2: Color
 AGP Aperture Size (MB)   : 64          F6 : Load BIOS Defaults
                                        F7 : Load Setup Defaults
```

### Auto Configuration
Auto Configuration selects predetermined optimal values of chipset parame- ters.
When Disabled, chipset parameters revert to setup information stored in CMOS.
Many fields in this screen are not available when Auto Configuration is Enabled.
The Choice: Enabled, Disabled.

### EDO DRAM Speed Selection
The value in this field must correspond to the speed of the EDO DRAM installed
in your system. This value is access speed, so a lower value means a faster
system.

### EDO CASx# MA Wait State
The board designer may elect to insert one additional wait state before the
assertion of the first CASx# for page hit cycles, thus allowing one additional
clock of MA setup time to the CASx# for the leadoff page hit cycle. Do not
change from the manufacturer's default unless you are getting memory
addressing errors.

### EDO RASx# Wait State
The board designer may elect to insert one additional wait state before RAS# is
asserted for row misses, thus allowing one additional MAX[13:0] setup time to
RASx# assertion. This field applies only if EDO DRAM is installed in the system.

SDRAM RAS-to-CAS Delay
If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance.  This field applies only when synchronous DRAM is installed in the system.

Synchronous DRAMs is a new DRAMs technology that uses a clock to synchronize signal input and output on a memory chip. The clock is coordinated with the CPU clock so the timing of the memory chips and the timing of the CPU are in Synch. SDRAM saves time when executing commands and transmitting data, therefore increasing the overall performance Of the computer.

SDRAM RAS Precharge Time
If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance.  This field applies only when synchronous DRAM is installed in the system.

SDRAM CAS Latency Time
When synchronous DRAM is installed, you can control the number of CLKs between when the SDRAMs sample a read command and when the contoller samples read data from the SDRAMs. Do not reset this field from the default value specified by the system designer.

SDRAM Precharge Control
When Enabled, all CPU cycles to SDRAM result in an All Banks Precharge Command on the SDRAM interface.

System BIOS Cacheable
Select Enabled allows caching of the system BIOS ROM at F000h-FFFFFh, 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.

8 Bit I/O Recovery Time
The recovery time is the length of time, measured in CPU clocks, the system will delay after the completion of an input/output request.  This delay takes

place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks.

16 Bit I/O Recovery Time
This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

Memory Hole At 15-16M
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.

Passive Release
When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

The Choice: Enabled, Disabled.

Delayed Transaction
The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specifica-tion version 2.1.

The Choice: Enabled, Disabled.

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 forward- ed to the AGP without any translation.  See www.agpforum.org for APG information.

## Integrated Peripherals

```
                    ROM PCI/ISA BIOS (2A69KTPC)
                       INTEGRATED PERIPHERALS
                       AWARD SOFTWARE, INC.

 IDE Primary Master PIO     :  Auto      IR Transmission Delay    :
 IDE Primary Slave PIO      :  Auto     Onboard Parallel Port     : 3BC/IRQ7
 IDE Secondary Master PIO   :  Auto     Parallel Port Mode        : ECP/EPP
 IDE Secondary Slave PIO    :  Auto     ECP Mode Use DMA          : 3
 IDE Primary Master UDMA    :  Auto     EPP Mode Select           : EPP1.9
 IDE Primary Slave UDMA     :  Auto     Onboard Serial Port 3     : 3E8
 IDE Secondary Master UDMA  :  Auto     Serial Port 3 Use IRQ     : IRQ3
 IDE Secondary Slave UDMA   : Auto      Onboard Serial Port 4     : 2E8
 On-Chip Primary PCI IDE    : Enabled   Serial Port 4 Use IRQ     : IRQ4
 On-Chip Secondary PCI IDE  : EnabledUSB Onboard Parallel Port 2  : 278
 Keyboard Support           : Disabled Parallel Port 2 Use IRQ    : IRQ5
 Init Display First         : PCI slot  Parallel Port 2 Mode      : ECP/EPP
 IDE HDD Block Mode         : Disabled  LPT2 ECP Mode Use DMA     : 1
 KBC Input Clock            : 8 MHz     On Board LAN Chip         : Enabled
 Onboard FDC Controller     : Enabled
 Onboard Serial Port 1      : 3F8/IRQ4  Esc: Quit   ↑↓→←   : Select Item
 Onboard Serial Port 2      : 2F8/IRQ3  F1 : Help    PU/PD/+/-  : Modify
 UART Mode Select           : Normal    F5 : Old Values (Shift)F2: Color
  UART2 Duplex Mode         : Half      F6 : Load BIOS Defaults
  RxD, TxD Active           : Hi, Hi    F7 : Load Setup Defaults
```

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.

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.

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, 3, 4)
Select a logical COM port address and IRQ value for the first/second/third/ fourth 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

UART Duplex Mode
Consult your IR peripheral documentation to select the correct setting of the Half Duplex or Full Duplex mode.

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 (1, 2)
Select a logical LPT port name and matching address for the physical parallel (printer) port.

Parallel Port Mode (1, 2)
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 (1, 2)
Select a DMA channel for the port.

EPP Mode Select
Select EPP port type 1.7 or 1.9.

On Board LAN Chip
Enable the  on board LAN Chip or not.

## Power Management Setup

```
                    ROM PCI/ISA BIOS (2A69KTPC)
                       POWER MANAGEMENT SETUP
                        AWARD SOFTWARE, INC.

 Power Management      : User Define   ** Reload Global timer Events **
 PM Control by APM     : Yes           IRQ[3-7,9-15], NMI    : Disabled
 Video Off Method      : V/H SYNC+Blank Primary IDE 0        : Disabled
 Video Off After       : Standby       Primary IDE 1         : Disabled
 Modem Use IRQ         : 3             Secondary IDE 0        : Disabled
 Doze Mode             : Disable       Secondary IDE 1        : Disabled
 Standby Mode          : Disable       Floppy Disk           : Disabled
 Suspend Mode          : Disable       Serial Port           : Disabled
 HDD Power Down        : Disable       Parallel Port         : Disabled
 Throttle Duty Cycle   : 62.5%         Power-On By LAN       : Enable
 VGA Active Monitor    : Disable
 Soft-Off By Ring      : Disable
 PowerOn by Ring       : 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
```

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

| | |
|---|---|
| Disable | 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%

VGA Active Monitor

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

Soft-Off By Ring

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

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.

Power-on by LAN

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

## PNP/PCI Configuration

```
                    ROM PCI/ISA BIOS (2A69KTPC)
                       PNP/PCI CONFIGURATION
                       AWARD SOFTWARE, INC.

 PNP OS Installed          : No          | Item Help
 Reset Configuration Data  :   Disabled  |
 Resources Controlled By :[Auto(ESCD)] X | Menu Level
 IRQ Resource           : Press Enter    |
 X DMA Resource         : Press Enter    | Select Yes if you are using a Plug an
 X Memory Resource      : Press Enter    | Play capable operation system Select
 PCI/VGA Palette Snoop     : Disabled    | No if you need the BIOS to configure
 Assign iRQ For VGA        : Enabled     | non-boot deviced
 Assign iRQ For USB        : Enabled     |
                                         |
                                         |
                                         |
                                         |
                                         |
                                         |_____
                                         | Esc: Quit     ↑↓→←  : Select Item
                                         | F1 : Help    PU/PD/+/-  : Modify
                                         | F5 : Old Values (Shift)F2: Color
                                         | 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.

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.

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.

**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.

## PC Health Status

```
              ROM PCI/ISA BIOS (2A69KTPC)
                 CHIPSET FEATURES SETUP
                  AWARD SOFTWARE, INC.

 CPU Warning Temperature  :   Disable
 Current System Temp.     :  26°C/78°F
 Current CPU1 Temp.       :  36°C/96°F
 Vcore                    : 1.81
 +3.3V                    : 3.49
 +5V                      : 5.17
 +12V                     : 12.50

                              Esc: Quit    ↑↓→←  : Select Item
                              F1 : Help    PU/PD/+/-  : Modify
                              F5 : Old Values (Shift)F2: Color
                              F6 : Load BIOS Defaults
                              F7 : Load Setup Defaults
```

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 System Temp.
A sensor onboard the PIA-662 board monitors the current system temperature.

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

Vcore

Power supply for CPU core, depends on type of CPU

+3.3 V
Power supply for DIMM, Chipset and Slot 1 Cache, should be ~ 3.5 V

+5 V
External power supply to board should be ~ +5 V

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

# 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 listened 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.

| CODE | CHECK | DESCRIPTION OF CHECK |
|------|-------|----------------------|
| 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<br>Memory presence test<br>OEM chip set routines<br>Clear low 64K of memory<br>Test first 64K memory. |
| 09 | Early Cache Initialization | Cyrix CPU initialization<br>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)<br>Set NUM_LOCK status. |
| 0D | Initialize Video Interface | Detect CPU clock.<br>Read CMOS location 14h to find out type of video in use.<br>Detect and Initialize Video Adapter. |
| 0E | Test Video Memory | Test video memory, write sign-on message to screen.<br>Setup shadow RAM - Enable shadow according to Setup. |
| 0F | Test DMA Controller 0 | BIOS checksum test.<br>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 an 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 Enabled |
| 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<br>Enable NMI, Enable cache before boot. |
| 52 | Initialize Option ROMs | Initialize any option ROMs present from C8000h to EFFFFh.<br>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 awdflash *.bin in the AUTOEXEC.BAT file.

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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