

**SBC8157 Series**  
**Pentium All-in-One**  
**PCI/ISA CPU Card**  
**User's Manual**

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## ESD Precautions

Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

## Unpacking

After unpacking the CPU card, check and see if the following items are included and in good condition. If any of the items is missing or damaged, notify your dealer immediately.

| Product Name | Function  | Package   |
|--------------|---|---|
| SBC8157VE    | SBC8157 Pentium all-in-one CPU card with onboard VGA and Ethernet | <ul style="list-style-type: none"><li>● SBC8157 Pentium All-in-One CPU Card</li><li>● User's Manual x 1</li><li>● Utility Diskettes x 4</li><li>● Warranty Card</li><li>● 3.5" FDD cable x1</li><li>● 3.5" HDD cable x 2</li><li>● Keyboard adapter x1</li><li>● COM, USB, and PS/2 mouse cable with connector bracket x 1</li><li>● COM and printer cable with connector bracket x 1</li></ul> |

Continued . . . . .

| Product Name | Function   | Package  |
|--------------|--|--|
| SBC8157V     | SBC8157 Pentium all-in-one CPU card with onboard VGA | <ul style="list-style-type: none"> <li>● SBC8157 Pentium All-in-One CPU Card</li> <li>● User's Manual x 1</li> <li>● Utility Diskettes x 2</li> <li>● Warranty Card</li> <li>● 3.5" FDD cable x1,</li> <li>● 3.5" HDD cable x 2</li> <li>● Keyboard adapter x1</li> <li>● COM, USB, and PS/2 mouse cable with connector bracket x 1</li> <li>● Printer cable with connector bracket x 1</li> </ul> |
| SBC8157      | SBC8157 Pentium all-in-one CPU card                  | <ul style="list-style-type: none"> <li>● SBC8157 Pentium All-in-One CPU Card</li> <li>● User's Manual x 1</li> <li>● Warranty Card</li> <li>● 3.5" FDD cable x1</li> <li>● 3.5" HDD cable x 2</li> <li>● Keyboard adapter x1</li> <li>● COM, USB, and PS/2 mouse cable with connector bracket x 1</li> <li>● Printer cable with connector bracket x 1</li> </ul>                                   |

Make sure that all of the items listed above are present.

### What To Do If There Is A Problem

If there are damaged or missing parts, contact your supplier and/or dealer immediately. Do not attempt to apply power to the board if there is damage to any of its components.

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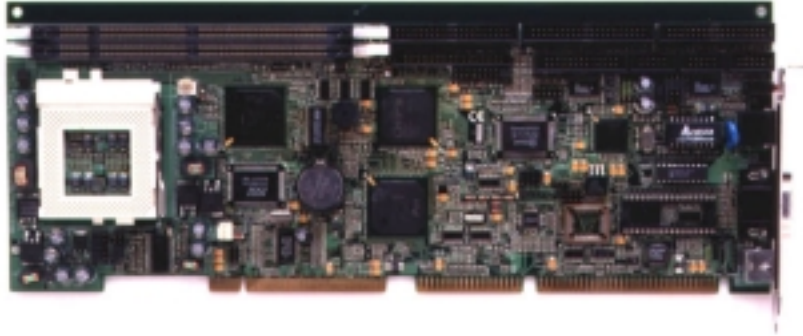
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# **C h a p t e r 1**

## **Introduction**

### **1.1 General Description**



The SBC8157 CPU Card Series consists of industrial grade CPU cards incorporating the Intel 430TX PCI chipset and the Winbond 83977 I/O chipset, both ensuring its compatibility with ISA bus passive backplanes. Its 6-layer structure reduces signal noise and meets all green functions with its built-in power management feature. These advanced concepts along with the PCI Local Bus architecture brings outstanding performance to Windows-based applications.

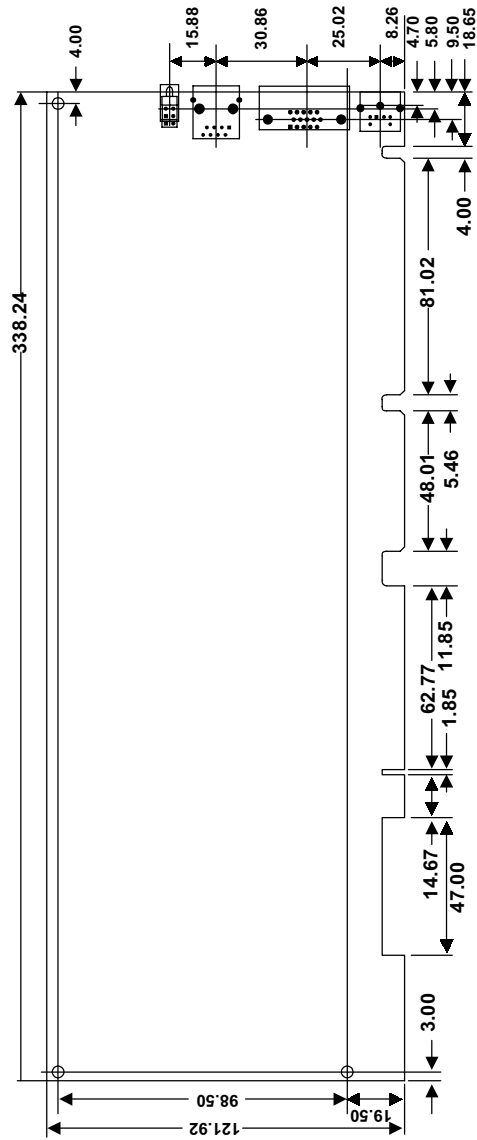
Designed for the professional embedded developers, the Pentium all-in-one SBC8157 CPU Card Series is virtually your ultimate one-step solution to various applications such as computer telephony integration (CTI), networking, telecommunications and client/server.

## **1.2 Specifications**

- **Chipset:** Intel 430TX
- **CPU Socket:** Socket 7
- **Bus Clock:** 60/66 MHz
- **CPU:** Intel Pentium P54C/P55C MMX 90-233 MHz, Low-power Pentium MMX 166/266 MHz; AMD K5/K6 90-300 MHz, K6-2/K6-3 300-400 MHz
- **Cache Size:** 512KB L2 cache AM
- **BIOS:** Award 2MB PnP Flash BIOS
- **System Memory:** 2 x 168-pin DIMM sockets supporting up to 256MB SDRAM
- **IDE Interface:** 2 bus mastering EIDE up to four devices, Ultra DMA/33 supported
- **FDD Interface:** Supports up to 2 drives
- **Serial Ports:** Two 16550 UARTs ports with 16 byte as one RS-232 and one RS-232/422/485
- **Parallel Ports:** One parallel port with ECP/EPP/SPP supported
- **Keyboard & PS/2 Mouse Connector:**
  - One PS/2 6-pin Mini DIN connector for mouse or keyboard
  - Onboard one internal 5-pin box-header for mouse and one internal 5-pin box-header for keyboard
- **USB:** 2 USB ports
- **IrDA:** 1 IrDA pin-header for wireless communication
- **Watchdog Timer:** System reset or Non-maskable interrupt software programmable time interval and jumper selectable (64 levels)
- **SSD:** M-Systems DOC 2000 supported up to 72MB
- **Hardware Monitoring:** Winbond W83781D monitoring for CPU/System temperature, system voltage, and chassis/fan speed

- **VGA Interface:**
  - **Controller:** C&T 69000 AGP CRT/LCD VGA controller
  - **Display Memory:** 2MB SDRAM integrated in chip
  - **CRT/LCD whaVGA Resolution:**
    - Non-interlaced CRT monitor up to 1280 x 1024 @ 256 colors
    - LCD panel up to 1024 x 768 @ 16bit colors
- **Ethernet Interface:**
  - **Chipset:** Intel 82559
  - **Transaction:** 10/100M Base-T supported
  - **Other Features:** Wake On LAN supported and RJ-45 connector equipped
- **Mechanical and Environmental Specifications:**
  - **Operating Temperature:** 0 ~ 60 °C (32 ~ 140 °F)
  - **Dimensions:** 338 x 122 mm (13.3" x 4.8")

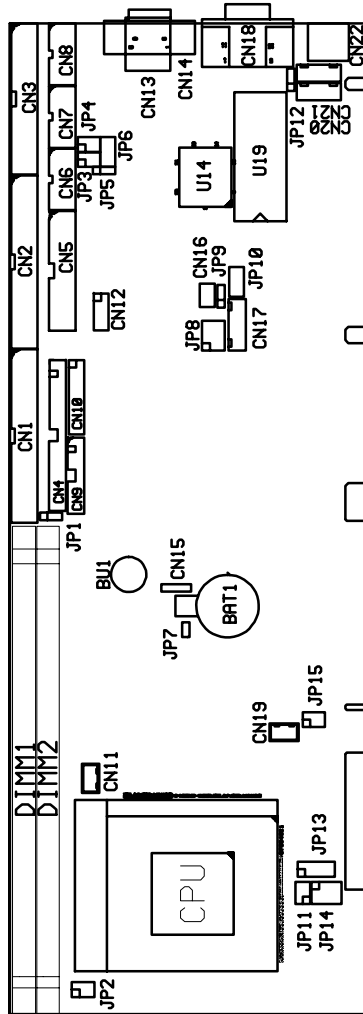
### 1.3 Board Dimensions





## Chapter 2 Jumpers and Connectors

### 2.1 Board Layout



## 2.2 Jumper Settings

The SBC8157 Series is configured to match the needs of your application by proper jumper settings. The following tables show the correct jumper settings for the onboard devices.

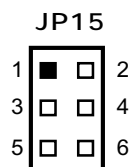
| Jumper | Function                                   | Default                  | Setting                     |
|--------|--|--------------------------|-----------------------------|
| JP1    | Power Selection of Flat Panel Connector    | 3.3V                     | Short 2-3                   |
| JP2    | CPU Clock Ration Selection                 | Intel Pentium MMX233     | Short 5-6                   |
| JP3    | COM2 Function:<br>RS-232/422/485 Selection | RS-232                   | Short 3-5, 4-6              |
| JP4    | COM2 Function:<br>RS-232/422/485 Selection | RS-232                   | Short 3-5, 4-6              |
| JP5    | Onboard Ethernet Function Control          | Enabled                  | Short 1-2                   |
| JP6    | COM2 Function:<br>RS-232/422/485 Selection | RS-232                   | Short 1-2, 7-8              |
| JP7    | Reserved                                   | None                     | Open                        |
| JP8    | AT/ATX Power Supply Selection              | AT power supply          | Short 1-2, 4-5, 7-8, 10-11  |
| JP9    | Watch-Dog Function                         | Disable                  | Open                        |
| JP10   | DiskOnChip® Memory Segment                 | D000-D3FFF               | Short 1-2                   |
| JP11   | CPU Type Selection                         | Intel P55C CPU           | Short 1-3, 2-4              |
| JP12   | External Keyboard/Mouse Power Select       | System Power             | Short 1-2                   |
| JP13   | CPU Vcore Power Selection                  | 2.8V                     | Short 7-8                   |
| JP14   | CPU Type Selection                         | Intel P55C CPU           | Short: 1-2, 4-5, 7-8, 10-11 |
| JP15   | CPU Clock Selection                        | 66MHz                    | Open                        |
| CN10   | General Output Connector                   | Internal Buzzer Enabled  | Short 2-4                   |
| CN15   | Internal/External Battery Connector        | Internal Battery Enabled | Short 2-3                   |

## 2.2.1 CPU Settings

When a new CPU is to be installed, the related jumpers including CPU type, CPU Bus Clock, CPU Voltage, PCI Bus Clock, etc. may need to be adjusted.

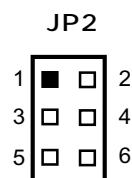
### 2.2.1.1 CPU Bus Clock Selection: JP15

| Options | Settings       |
|---------|----------------|
| 60MHz   | Short 1-2      |
| 66MHz   | Open (default) |



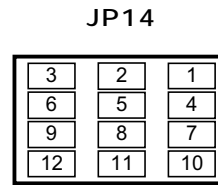
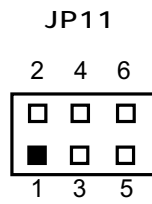
### 2.2.1.2 CPU Clock Ration Selection: JP2

| Options                |              | JP2 Settings |       |       |
|------------------------|--------------|--------------|-------|-------|
| Intel CPU              | Other CPUs   | 1-2          | 3-4   | 5-6   |
| x 2.5                  | x 4.5        | Short        | Short | Short |
| x 4                    | x 2.5        | Short        | Short | Open  |
| x 2                    | x 4          | Short        | Open  | Short |
| Reserved               | x 2, x 6     | Short        | Open  | Open  |
| x 3                    | x 5          | Open         | Short | Short |
| Reserved               | x 3          | Open         | Short | Open  |
| x 3.5, x 1.5 (default) | x 5.5        | Open         | Open  | Short |
| Reserved               | x 1.5, x 3.5 | Open         | Open  | Open  |



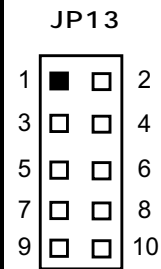
### 2.2.1.3 CPU Type Selection: JP11, JP14

| Options   | Settings                 |                                      |
|---|--------------------------|--------------------------------------|
|   | JP11                     | JP14                                 |
| Single Voltage CPU:<br>Intel P54C, Cyrix 6x86, AMD K5                                 | Short 3-5, 4-6           | Short 1-2, 4-5, 7-8, 10-11           |
| Dual Voltage CPU:<br>Intel P55C (MMX), Cyrix 6x86L/6x86MX/ 6x86MII, AMD K6/ K6-2/K6-3 | Short 1-3, 2-4 (default) | Short 1-2, 4-5, 7-8, 10-11 (default) |
| Dual Voltage CPU:<br>Intel Tillamook (Low PowerMMX) CPU                               | Short 1-3, 2-4           | Short 2-3, 5-6, 8-9, 11-12           |



### 2.2.1.4 CPU V<sub>core</sub> Selection: JP13

| CPU Core       | JP13 Settings |       |       |       |       |
|----------------|---------------|-------|-------|-------|-------|
|                | 1-2           | 3-4   | 5-6   | 7-8   | 9-10  |
| 1.8V           | Open          | Short | Open  | Short | Short |
| 1.85V          | Short         | Short | Open  | Short | Short |
| 1.9V           | Open          | Open  | Short | Short | Short |
| 1.95V          | Short         | Open  | Short | Short | Short |
| 2.0V           | Open          | Short | Short | Short | Short |
| 2.1V           | Short         | Open  | Open  | Open  | Open  |
| 2.2V           | Open          | Short | Open  | Open  | Open  |
| 2.3V           | Short         | Short | Open  | Open  | Open  |
| 2.4V           | Open          | Open  | Short | Open  | Open  |
| 2.5V           | Short         | Open  | Short | Open  | Open  |
| 2.6V           | Open          | Short | Short | Open  | Open  |
| 2.7V           | Short         | Short | Short | Open  | Open  |
| 2.8V (default) | Open          | Open  | Open  | Short | Open  |
| 2.9V           | Short         | Open  | Open  | Short | Open  |
| 3.0V           | Open          | Short | Open  | Short | Open  |
| 3.1V           | Short         | Short | Open  | Short | Open  |
| 3.2V           | Open          | Open  | Short | Short | Open  |
| 3.3V           | Short         | Open  | Short | Short | Open  |
| 3.4V           | Open          | Short | Short | Short | Open  |
| 3.5V           | Short         | Short | Short | Short | Open  |



### 2.2.1.5 CPU Settings Reference

| CPU Type                           | CPU Clock | Jumper Settings          |                     |           |                           |                            |
|------------------------------------|-----------|--------------------------|---------------------|-----------|---------------------------|----------------------------|
|                                    |           | JP11                     | JP2                 | JP15      | JP13                      | JP14                       |
| <b>Intel P54C</b>                  |           |                          |                     |           |                           |                            |
| Intel Pentium 90MHz                | 60MHz     | Short 3-5, 4-6           | Short 5-6           | Short 1-2 | Short 3-4, 5-6, 7-8, 9-10 | Short 1-2, 4-5, 7-8, 10-11 |
| Intel Pentium 100MHz               | 66MHz     | Short 3-5, 4-6           | Short 5-6           | Open      | Short 3-4, 5-6, 7-8, 9-10 | Short 1-2, 4-5, 7-8, 10-11 |
| Intel Pentium 120MHz               | 60MHz     | Short 3-5, 4-6           | Short 1-2, 5-6      | Short 1-2 | Short 3-4, 5-6, 7-8, 9-10 | Short 1-2, 4-5, 7-8, 10-11 |
| Intel Pentium 133MHz               | 66MHz     | Short 3-5, 4-6           | Short 1-2, 5-6      | Open      | Short 3-4, 5-6, 7-8, 9-10 | Short 1-2, 4-5, 7-8, 10-11 |
| Intel Pentium 166MHz               | 66MHz     | Short 3-5, 4-6           | Short 1-2, 3-4, 5-6 | Open      | Short 3-4, 5-6, 7-8, 9-10 | Short 1-2, 4-5, 7-8, 10-11 |
| Intel Pentium 200MHz               | 66MHz     | Short 3-5, 4-6           | Short 3-4, 5-6      | Open      | Short 3-4, 5-6, 7-8, 9-10 | Short 1-2, 4-5, 7-8, 10-11 |
| <b>Intel P55C(MMX)</b>             |           |                          |                     |           |                           |                            |
| Intel Pentium MMX 166MHz           | 66MHz     | Short 1-3, 2-4           | Short 1-2, 3-4, 5-6 | Open      | Short 7-8                 | Short 1-2, 4-5, 7-8, 10-11 |
| Intel Pentium MMX 200MHz           | 66MHz     | Short 1-3, 2-4           | Short 3-4, 5-6      | Open      | Short 7-8                 | Short 1-2, 4-5, 7-8, 10-11 |
| Intel Pentium MMX 233MHz           | 66MHz     | Short 1-3, 2-4 (default) | Short 5-6           | Open      | Short 7-8                 | Short 1-2, 4-5, 7-8, 10-11 |
| <b>Intel Tillamook (MMX)</b>       |           |                          |                     |           |                           |                            |
| Intel Pentium Tillamook MMX 166MHz | 66MHz     | Short 1-3, 2-4           | Short 1-2, 3-4, 5-6 | Open      | Short 5-6, 7-8, 9-10      | Short 2-3, 5-6, 8-9, 11-12 |
| Intel Pentium Tillamook MMX 266MHz | 66MHz     | Short 1-3, 2-4           | Short 1-2, 3-4      | Open      | Short 5-6, 7-8, 9-10      | Short 2-3, 5-6, 8-9, 11-12 |
| <b>Cyrix 6x86</b>                  |           |                          |                     |           |                           |                            |
| Cyrix P-150+                       | 60MHz     | Short 3-5, 4-6           | Short 1-2           | Short 1-2 | Short 1-2, 5-6, 7-8       | Short 1-2, 4-5, 7-8, 10-11 |
| Cyrix P-166+                       | 66MHz     | Short 3-5, 4-6           | Short 1-2           | Open      | Short 1-2, 5-6, 7-8       | Short 1-2, 4-5, 7-8, 10-11 |

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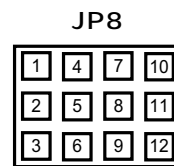
| CPU Type            | CPU Clock | Jumper Settings |                     |           |                     |                            |
|---------------------|-----------|-----------------|---------------------|-----------|---------------------|----------------------------|
|                     |           | JP11            | JP2                 | JP15      | JP13                | JP14                       |
| <b>Cyrix 6x86MX</b> |           |                 |                     |           |                     |                            |
| Cyrix MMX PR-166    | 60MHz     | Short 1-3, 2-4  | Short 1-2, 3-4      | Short 1-2 | Short 1-2, 7-8      | Short 1-2, 4-5, 7-8, 10-11 |
| Cyrix MMX PR-200    | 66MHz     | Short 1-3, 2-4  | Short 1-2, 3-4      | Open      | Short 1-2, 7-8      | Short 1-2, 4-5, 7-8, 10-11 |
| Cyrix MMX PR-233    | 66MHz     | Short 1-3, 2-4  | Short 3-4           | Open      | Short 1-2, 7-8      | Short 1-2, 4-5, 7-8, 10-11 |
| Cyrix MII-300       | 66MHz     | Short 1-3, 2-4  | Open                | Open      | Short 1-2, 7-8      | Short 1-2, 4-5, 7-8, 10-11 |
| <b>Cyrix 6x86L</b>  |           |                 |                     |           |                     |                            |
| Cyrix 6x86L P-150   | 60MHz     | Short 1-3, 2-4  | Short 1-2           | Short 1-2 | Short 7-8           | Short 1-2, 4-5, 7-8, 10-11 |
| Cyrix 6x86L P-166   | 66MHz     | Short 1-3, 2-4  | Short 1-2           | Open      | Short 7-8           | Short 1-2, 4-5, 7-8, 10-11 |
| <b>AMD K5</b>       |           |                 |                     |           |                     |                            |
| AMD K5-PR90         | 60MHz     | Short 3-5, 4-6  | Open                | Short 1-2 | Short 1-2, 3-4, 7-8 | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K5-PR100        | 66MHz     | Short 3-5, 4-6  | Open                | Open      | Short 1-2, 3-4, 7-8 | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K5-PR120        | 60MHz     | Short 3-5, 4-6  | Short 1-2           | Short 1-2 | Short 1-2, 3-4, 7-8 | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K5-PR133        | 66MHz     | Short 3-5, 4-6  | Short 1-2           | Open      | Short 1-2, 3-4, 7-8 | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K5-PR166        | 66MHz     | Short 3-5, 4-6  | Short 1-2, 3-4      | Open      | Short 1-2, 3-4, 7-8 | Short 1-2, 4-5, 7-8, 10-11 |
| <b>AMD K6</b>       |           |                 |                     |           |                     |                            |
| AMD K6-166          | 66MHz     | Short 1-3, 2-4  | Short 1-2, 3-4      | Open      | Short 1-2, 7-8      | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K6-200          | 66MHz     | Short 1-3, 2-4  | Short 3-4           | Open      | Short 1-2, 7-8      | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K6-233          | 66MHz     | Short 1-3, 2-4  | Open                | Open      | Short 5-6, 7-8      | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K6-266          | 66MHz     | Short 1-3, 2-4  | Short 1-2, 5-6      | Open      | Short 3-4           | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K6-300          | 66MHz     | Short 1-3, 2-4  | Short 1-2, 3-4, 5-6 | Open      | Short 3-4           | Short 1-2, 4-5, 7-8, 10-11 |

Continued . . . . .

| CPU Type          | CPU Clock | Jumper Settings |                |      |                |                            |
|-------------------|-----------|-----------------|----------------|------|----------------|----------------------------|
|                   |           | JP11            | JP2            | JP15 | JP13           | JP14                       |
| <b>AMD K6-2</b>   |           |                 |                |      |                |                            |
| AMD K6-2-333      | 66MHz     | Short 1-3, 2-4  | Short 3-4, 5-6 | Open | Short 3-4      | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K6-2-366      | 66MHz     | Short 1-3, 2-4  | Short 5-6      | Open | Short 3-4      | Short 1-2, 4-5, 7-8, 10-11 |
| AMD K6-2-400      | 66MHz     | Short 1-3, 2-4  | Short 1-2      | Open | Short 1-2, 3-4 | Short 1-2, 4-5, 7-8, 10-11 |
| <b>AMD K6-III</b> |           |                 |                |      |                |                            |
| AMD K6-III-400    | 66MHz     | Short 1-3, 2-4  | Short 1-2      | Open | Short 5-6      | Short 1-2, 4-5, 7-8, 10-11 |

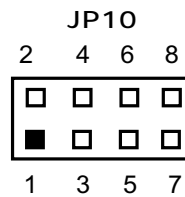
### 2.2.2 Power Supply Selection: JP8

| Options | Settings                             |
|---------|--------------------------------------|
| ATX P/S | Short 2-3, 5-6, 8-9, 11-12           |
| AT P/S  | Short 1-2, 4-5, 7-8, 10-11 (default) |



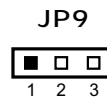
### 2.2.3 DiskOnChip® Memory Segment: JP10

| Options                 | Settings  |
|-------------------------|-----------|
| D0000 – D3FFF (default) | Short 1-2 |
| D4000 – D7FFF           | Short 3-4 |
| D8000 – DBFFF           | Short 5-6 |
| DC000 – DFFFF           | Short 7-8 |



### 2.2.4 Watchdog Function: JP9

| Options | Settings  |
|---------|-----------|
| NMI     | Short 1-2 |
| Restart | Short 2-3 |



## 2.2.5 RS232/422/485 (COM2) Selection: JP3,JP4,JP6

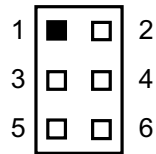
*JP3, JP4, JP6: RS-232/422/485 Selection*

*COM1 is fixed for RS-232 function only.*

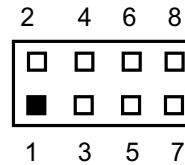
*COM2 is selectable for RS-422, 485 function.*

| COM4             | JP3            | JP4            | JP6            |
|------------------|----------------|----------------|----------------|
| RS-232 (default) | Short 3-5, 4-6 | Short 3-5, 4-6 | Short 1-2,7-8  |
| RS-422           | Short 1-3, 2-4 | Short 1-3, 2-4 | Short 3-4      |
| RS-485           | Short 1-3, 2-4 | Short 1-3, 2-4 | Short 5-6, 7-8 |

JP3 and JP4

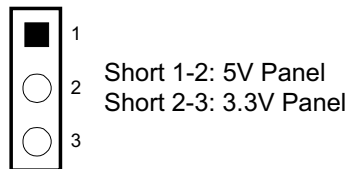


JP6



## 2.2.6 Panel Power Selection: JP1

JP1



## 2.2.7 Onboard Ethernet Function Enable/Disable: JP5

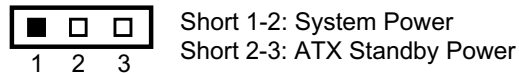
JP5





## 2.2.8 External Keyboard/Mouse Power Selection: JP12

JP12



## 2.3 Connectors

The connectors allow the CPU card to connect with other parts of the system. Some problems encountered with your system may be caused by loose or improper connections. Ensure that all connectors are in place and firmly attached. The following tables list the function of each connector on the SBC8157 Series. Their corresponding pin assignments will be described in Appendix B.

### 2.3.1 SBC8157VE Connectors

| Connectors           | Label | Connectors                              | Label |
|----------------------|-------|---|-------|
| IDE2 Connector       | CN1   | RJ-45 LAN Connector                     | CN13  |
| IDE1 Connector       | CN2   | Int./Ext. Battery Select                | CN15  |
| FDD Connector        | CN3   | External LAN Card Wake On LAN Connector | CN16  |
| 36 bit LCD Connector | CN4   | ATX Control Connector                   | CN17  |
| LPT Connector        | CN5   | VGA Connector                           | CN18  |
| USB Connector        | CN6   | Fan Connector 2                         | CN19  |
| COM2 Connector       | CN7   | External Keyboard                       | CN20  |
| COM1 Connector       | CN8   | External PS/2 Mouse                     | CN21  |
| 24 bit LCD Connector | CN9   | Keyboard DIN                            | CN22  |
| General Output       | CN10  | LAN Boot ROM Socket                     | U14   |
| Fan Connector 1      | CN11  | DiskOnChip® Socket                      | U19   |
| IrDA Connector       | CN12  |   |       |

### 2.3.2 SBC8157V Connectors

| Connectors           | Label | Connectors                              | Label |
|----------------------|-------|---|-------|
| IDE2 Connector       | CN1   | COM1 DB9 Connector                      | CN14  |
| IDE1 Connector       | CN2   | Int./Ext. Battery Select                | CN15  |
| FDD Connector        | CN3   | External LAN Card Wake On LAN Connector | CN16  |
| 36 bit LCD Connector | CN4   | ATX Control Connector                   | CN17  |
| LPT Connector        | CN5   | VGA Connector                           | CN18  |
| USB Connector        | CN6   | Fan Connector 2                         | CN19  |
| COM2 Connector       | CN7   | External Keyboard                       | CN20  |
| 24 bit LCD Connector | CN9   | External PS/2 Mouse                     | CN21  |
| General Output       | CN10  | Keyboard DIN                            | CN22  |
| Fan Connector 1      | CN11  | LAN Boot ROM Socket                     | U14   |
| IrDA Connector       | CN12  | DiskOnChip® Socket                      | U19   |

### 2.3.3 SBC8157 Connectors

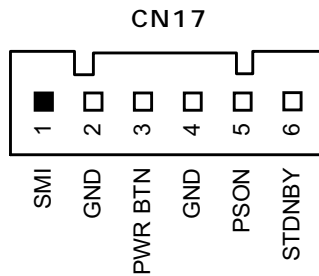
| Connectors         | Label | Connectors                              | Label |
|--------------------|-------|---|-------|
| IDE2 Connector     | CN1   | Int./Ext. Battery Select                | CN15  |
| IDE1 Connector     | CN2   | External LAN Card Wake On LAN Connector | CN16  |
| FDD Connector      | CN3   | ATX Control Connector                   | CN17  |
| LPT Connector      | CN5   | Fan Connector 2                         | CN19  |
| USB Connector      | CN6   | External Keyboard                       | CN20  |
| COM2 Connector     | CN7   | External PS/2 Mouse                     | CN21  |
| General Output     | CN10  | Keyboard DIN                            | CN22  |
| Fan Connector 1    | CN11  | LAN Boot ROM Socket                     | U14   |
| IrDA Connector     | CN12  | DiskOnChip® Socket                      | U19   |
| COM1 DB9 Connector | CN14  |   |       |

## 2.3.4 Improvised Connectors

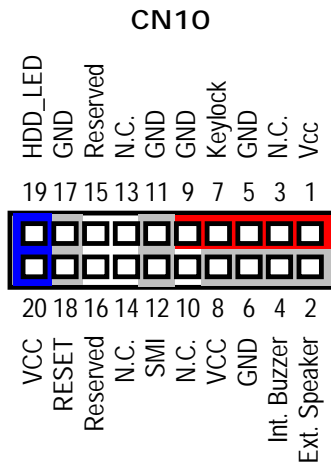
### 2.3.4.1 ATX Power Switch/Soft Power Switch/SMI Switch: CN17

A momentary switch, connected to this lead (**CN17**), controls the system power. Refer to Section 5.8 “Soft-Off by PWR-BTTN” option and the Power ON Function on section 5.10 for detailed description of this switch.

NOTE: *This connector functions only with an ATX power supply.*



### 2.3.4.2 General Output Connector: CN10



### Power LED/KeyLock Switch

This 5-pin connector, designated at **Pins 1, 3, 5, 7 and 9 of CN10**, connects the system power LED indicator and keyboard lock to their respective switches on the case. The Power LED lights up when the system is powered ON and blinks when it is in Sleep mode. KeyLock switch enables the keyboard locking function of the SBC8157 Series.

### Speaker Connector

**Pins 2, 4, 6, and 8 of CN10** is a 4-pin connector that connects to the case-mounted speaker unit. Default setting is *Short 2-4* for onboard buzzer. In case you install an external speaker, take off the jumper on **Pins 2 & 4** then plug the external speaker connector onto **Pins 2 (-) & 8 (+)** of **CN10**.

### SMI Switch

This switch enables the connection between the SBC8157 Series -based system and the installed hardware. Aside from the SMI Switch featured in the previous section, **Pins 11 & 12 of CN10** also support the SMI switch function. Refer to Sections 5.8 for a detailed description of its function.

### Reset Switch

**Pins 17 & 18 of CN10** connect to the case-mounted reset switch and allow rebooting of your computer instead of turning OFF the power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

### HDD LED

This connector extends to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed. **Pins 19 & 20 of CN10** connect the hard disk drive and the front panel HDD

## Chapter 3

### Installation

This chapter describes the hardware installation procedures on the SBC8157 Series all-in-one Pentium CPU cards.

The following is a list of typical peripherals required to build a minimum system:

- Power supply and passive backplane (optional)
- Display monitor
- IBMTM PC/AT keyboard
- Floppy or hard disk with MS-DOS or Flash Disk emulator

### 3.1 System Memory

SBC8157 Series has two onboard 168-pin DIMM sockets, providing the user with up to 256MB system memory. The system supports auto-detect memory size and bank.

#### 3.1.1 System Memory Installation

You can install from 8- up to 128- MB memory onboard using 8/16/32/64 or 128 MB, 168-pin DIMM modules.

1. Switch OFF all power to the system. Then locate the DIMM1 and DIMM2 sockets beside the CPU socket.
2. DIMM1 socket has locking tabs on both sides. Open the locking tabs by pushing them on a sideways direction.
3. DIMM1 has key indicators embedded on its connectors (1 on the middle, 1 on the left side).
4. Likewise DIMM modules have key indicators. Locate the indicators on the DIMM modules and align them to the key indicators on the DIMM sockets.
5. With the DIMM module held upright, insert the modules until the locking tabs on Step 2 snaps back into place. This latches the DIMM modules into place.

6. Repeat Steps 2-5 for DIMM 2.

## **3.2 CPU Installation**

1. Align pin one (white dot) on the CPU with pin one of the socket. Pin one of the CPU socket may either be marked on the board or indicated by an arrow sign on the base of the socket. Normally, its diagonal corner distinguishes pin one on the socket.
2. To complete the CPU installation, gently press the CPU into place.
3. Double-check the insertion and orientation of the CPU before applying power. Improper installation will result in permanent damage to the CPU.

## **3.3 Configuring Power Supply**

### **3.3.1 ATX Power Supply**

Follow these instructions if the system has an ATX power supply installed.

1. Install the ATX Power Control Connector cable to the designated ATX power control connector on your backplane. The ATX Power Control Connector cable is a 6-pin cable.
2. Configure the proper jumper settings by setting **JP8** to *Short 2-3, 5-6, 8-9, 11-12*.

### **3.3.2 AT Power Supply**

When using an AT power supply in your system, there is only one step to follow.

1. Configure the proper jumper settings by setting **JP8** to *Short 1-2, 4-5, 7-8, 10-11*.

### **3.4 Completing Installation**

To complete the installation, the following steps should be followed:

1. Make sure the power is OFF.
2. Set the configuration jumpers according to the jumper setting on Chapter 2.
3. Install the SBC8157 Series into one of the slots on the passive backplane. You may allow the SBC8157 Series to stand alone as a single board computer.
4. Connect the I/O cables and peripherals, i.e. floppy disk, hard disk, monitor, keyboard, power supply and etc. to the CPU board.

NOTE:        *The color of pin one is usually red or blue, while others are gray.*

5. Turn ON the system power.





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## Chapter 4

### Hardware Description

This chapter gives a detailed explanation of the hardware features onboard the SBC8157 Series all-in-one Pentium CPU cards.

#### 4.1 CPU

The SBC8157 Series supports Intel Pentium, AMD K5/K6/K6-2/K6-III, and Cyrix 6x86 CPUs. Systems based on these CPUs can be operated under UNIX, OS/2, Windows NT, Windows 95 and MS-DOS environments. The system's performance depends on the installed CPU on the board. When installing a new CPU, the jumpers including CPU type, CPU Clock, CPU Voltage and PCI Bus Clock may need to be adjusted. Make sure all the settings are correct for the installed CPU to prevent any damage to the CPU.

#### 4.2 BIOS

The system BIOS used in SBC8157 Series is Award Plug and Play BIOS. The SBC8157 Series contains a single SST 29EE020 Flash EPROM.

#### 4.3 I/O Port Address Map

The CPU card communicates via I/O ports. It has a total of 1KB port addresses that can be assigned to other devices via I/O expansion cards.

| Address | Devices                 |
|---------|-------------------------|
| 000-01F | DMA controller #1       |
| 020-03F | Interrupt controller #1 |
| 040-05F | Timer                   |

Continued . . . . .

| Address | Devices                                 |
|---------|---|
| 060-06F | Keyboard controller                     |
| 070-07F | Real time clock, NMI                    |
| 080-09F | DMA page register                       |
| 0A0-0BF | Interrupt controller #2                 |
| 0F0     | Clear math coprocessor busy signal      |
| 0C0-0DF | DMA controller #2                       |
| 0F1     | Reset math coprocessor                  |
| 0F8-0FF | Math processor                          |
| 120     | Disable watchdog timer operation (read) |
| 121     | Enable watchdog timer operation (read)  |
| 122     | Watchdog                                |
| 1F0-1F8 | Fixed disk controller                   |
| 200-207 | Game port                               |
| 300-31F | Prototype card                          |
| 360-36F | Reserved                                |
| 378-37F | Parallel port #1                        |
| 380-38F | SDLC #2                                 |
| 3A0-3AF | SDLC #1                                 |
| 3B0-3BF | MDA video card (including LPT1)         |
| 3C0-3CF | EGA card                                |
| 3D0-3DF | CGA card                                |
| 3F0-3F7 | Floppy disk controller                  |
| 3F8-3FF | Serial port #1 (COM1)                   |
| 2F8-2FF | Serial port #2 (COM2)                   |
| 3F0     | Winbond I/O                             |

## 4.4 Interrupt Controller

The SBC8157 Series is a fully PC compatible control board. It consists of 16 ISA interrupt request lines and 4 of the 16 can be either ISA or PCI. The mapping list of the 16 interrupt request lines is shown below;

|       |   |
|-------|---|
| NMI   | Parity check error                          |
| IRQ0  | System timer output                         |
| IRQ1  | Keyboard                                    |
| IRQ2  | Interrupt rerouting from IRQ8 through IRQ15 |
| IRQ3  | Serial port #2                              |
| IRQ4  | Serial port #1                              |
| IRQ5  | Reserved                                    |
| IRQ6  | Floppy disk controller                      |
| IRQ7  | Parallel port #1                            |
| IRQ8  | Real time clock                             |
| IRQ9  | Reserved                                    |
| IRQ10 | Reserved                                    |
| IRQ11 | Reserved                                    |
| IRQ12 | PS/2 Mouse                                  |
| IRQ13 | Math coprocessor                            |
| IRQ14 | Primary IDE channel                         |
| IRQ15 | Secondary IDE Channel                       |

## 14.5 IDE Interface Connector

The SBC8157 Series includes a 2-channel PCI bus enhanced IDE controller which can support master/slave mode and post write transaction mechanisms with 64-byte buffer, and master data transaction. This feature, connected via connectors **CN2** and **CN1** allows SBC8157 Series to handle 4 IDE drives. Refer to Appendix B for the pinout assignments of **CN2** and **CN1**.

## **4.6 VGA Interface Connector**

### **4.6.1 Flat Panel/CRT Interface Controller**

The built-in C&T 69000 is a high-performance flat panel/super VGA display controller with onboard 2M bytes VGA RAM. It is capable of driving a wide array of flat panel and CRT displays. It can also support CRT at a maximum resolution of up to 1280x1024 with 256 colors, 640x480 with 16M colors, and panel resolutions of 1024x768, and 1280x1024. The C&T 69000 also supports monochrome panels up to 64 gray scales. It displays up to 226,981 different colors on passive STN flat panels and up to 16M colors on 24-bit active matrix flat panels.

### **4.6.2 Features**

- Fully compatible with IBM™ VGA
- Flat panel and CRT monitor can be displayed simultaneously
- Onboard 2M bytes VGA RAM
- Supports panel resolution up to 1280x1024
- Supports non-interlaced CRT monitors with resolutions up to 1280x1024 256 colors
- Direct interface to Color and Monochrome Dual Drive and Single Drive panels
- SMARTMAP™ intelligent color to gray scale conversion enhances text legibility
- Integrated programmable linear address feature accelerates GUI performance
- Hardware Windows acceleration
- Built-in 44 pins general purpose connector for flat panel display, and an extended 20-pin for 36 bit XVGA flat panel

### 4.6.3 VGA/Flat Panel Connector: CN4, CN9, CN18

The SBC157 Series has three connectors that support CRT VGA and flat panel displays, individually or simultaneously. **CN18** is a standard 15-pin pin header connector commonly used for the CRT VGA display, and **CN4** (44-pin) **CN9** (20-pin) are dual-in-line headers for flat panel connection. Configuration of the VGA interface is done via the software utility and no jumper setting is required. The following two tables are the pin assignments for the CRT/VGA connector and the flat panel connector.

#### CN18: CRT/VGA Connector Pin Assignment

| Pin | Description     | Pin | Description   | Pin | Description |
|-----|-----------------|-----|---------------|-----|-------------|
| 1   | Red             | 2   | Green         | 3   | Blue        |
| 4   | N/A             | 5   | GND           | 6   | AGND        |
| 7   | AGND            | 8   | AGND          | 9   | N/A         |
| 10  | GND             | 11  | N/A           | 12  | DDC DAT     |
| 13  | Horizontal Sync | 14  | Vertical Sync | 15  | DDC CLK     |

#### CN4: Flat Panel Connector Pin Assignment

| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | -12V        | 2   | +12VM       | 3   | GND         |
| 4   | GND         | 5   | VDDM        | 6   | VDDM        |
| 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  | GND         |
| 34  | GND         | 35  | SHFCLK      | 36  | FLM         |
| 37  | M           | 38  | LP          | 39  | GND         |
| 40  | ENABKL      | 41  | GND         | 42  | ENAVDD      |
| 43  | VDDM        | 44  | VDDM        |     |             |

### CN9: Flat Panel Connector for XGA

| Pin | Description | Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|-----|-------------|
| 1   | GND         | 2   | GND         | 3   | P24         |
| 4   | P25         | 5   | P26         | 6   | P27         |
| 7   | P28         | 8   | P29         | 9   | GND         |
| 10  | GND         | 11  | P30         | 12  | P31         |
| 13  | P32         | 14  | P33         | 15  | P34         |
| 16  | P35         | 17  | VDDM        | 18  | VDDM        |
| 19  | +12VM       | 20  | +12VM       |     |             |

#### 4.6.4 Flat Panel Connector Pin Description

| Name            | Description                                       |
|-----------------|---|
| P0~P35          | Flat panel data output                            |
| ENABKL          | Activity Indicator and Enable Backlight outputs   |
| SHFCLK          | Shift clock. Pixel clock for flat panel data      |
| M               | M signal for panel AC drive control               |
| LP              | Latch pulse. Flat panel equivalent of HSYNC       |
| FLM             | First line marker. Flat panel equivalent of VSYNC |
| +12VM           | +12V power controlled by chipset                  |
| ENAVEE / ENAVDD | Power sequencing controls for panel LCD bias volt |
| VDDM            | 3.3V or 5V selected by JP1                        |

### 4.7 Floppy Disk Controller

The SBC8157 Series provides a 34-pin header type connector, **CN3**, supporting up to two floppy drives. The floppy drives may be any one of the following types: 5.25" 360KB/1.2MB and 3.5" 720KB/1.44MB/2.88MB. The **CN3** pin assignment is listed in Appendix B.



## **4.8 Parallel Port Interface**

The SBC8157 Series' onboard **CN5** is a multi-mode parallel port able to support:

- **Standard mode:** IBM PC/XT, PC/AT and PS/2TM compatible with bi-directional parallel port
- **Enhanced mode:** Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)
- **High speed mode:** Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

The address select of the onboard parallel port in LPT1 (3BCH), LPT2 (378H), LPT3 (278H) or disabled is done by BIOS CMOS setup.

## **4.9 Serial Port Interface**

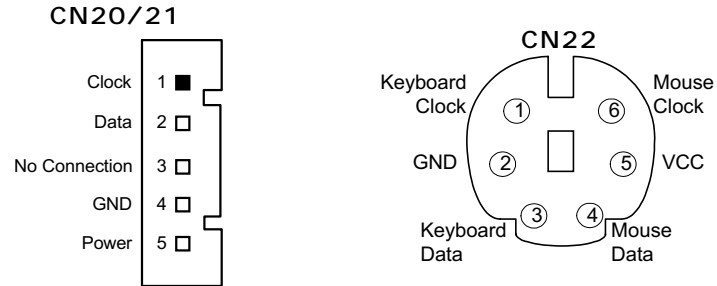
The serial interface onboard SBC8157 Series consists of COM1 port (**CN8** or **CN14**) supports RS-232 and COM2 (**CN7**) provide RS-232/422/485 connectivity.

### **4.9.1 Serial Ports IRQ Selection**

SBC8157 Series uses a 10-pin connector for COM1 and COM2 (**CN8** and **CN7**) and a DB9-pin connector for COM1 (**CN14**). Interrupt Requests on COM1 and COM2 are selected via IRQ4 and IRQ3 respectively. Additionally, both ports can be enabled or disabled via BIOS setting. The RS-232 pin assignments for COM1 and COM2 along with the RS-485 pin assignments for COM2 are in Appendix B.

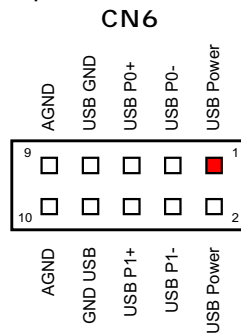
## 4.10 Keyboard and PS/2 Mouse Connectors

The SBC8157 Series provides a keyboard (**CN20**) and PS/2 mouse (**CN21**) interface with a 5-pin connector. **CN22** is a DIN connector for PS/2 keyboard connection.



## 4.11 USB Connector

The Universal Serial Bus (USB) connector on the SBC8157 Series is for installation of peripherals supporting the USB interface. **CN6** is the 10-pin USB connector on the SBC8157.



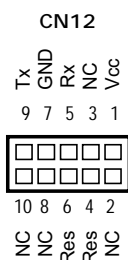
## 4.12 Ethernet Connector

The RJ-45 connector is used for Ethernet. To connect the SBC8157 Series to 10-Base-T or 100-Base-T hub, just plug one end of the cable into the **CN13** and connect the other end of the cable to a 10-Base-T hub.

NOTE: *This connector comes with the SBC8157VE only.*

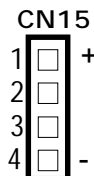
## 4.13 IrDA Connector

**CN12** is a 10-pin connector is used for an IrDA connector for wireless communication.



## 4.14 External/Internal Battery Select

**CN15** is a 4-pin connector that allows the user to connect an external battery to maintain the information stored in the CMOS RAM in case the built-in battery malfunctions. The default is set to Internal Battery with a jumper connecting pins 2 and 3. When using an external battery, connect the external battery to pins 1 and 4 of **CN15** and leave pins 2 and 3 *open*.

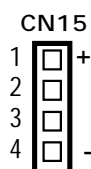


## 4.15 Fan Connectors

**CN11** and **CN19** are fan connectors connected to the system cooling fan or CPU. Pentium CPUs require a fan for heat dispensing. A fan connector is thus designed on the SBC8157 Series to provide the fan power. Pin assignments of both connectors are listed in Appendix B.

## 4.16 External/Internal Battery Select

**CN15** is a 4-pin connector that allows the user to connect an external battery to maintain the information stored in the CMOS RAM in case the built-in battery malfunctions. The default is set to Internal Battery with a jumper connecting pins 2 and 3. When using an external battery, connect the external battery to pins 1 and 4 of **CN15** and leave pins 2 and 3 open.

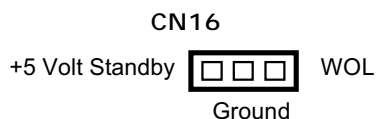


## 4.17 External LAN Card Wake On LAN Connector

**CN16** is a connector that connects to a LAN card with a Wake-On-LAN input. The connector powers up the system when a wakeup packet or signal is received through the LAN card.

IMPORTANT:

*This feature requires that Wake On LAN is set to Enabled (see 5.8) and that your system has an ATX power supply.*



## **Chapter 5**

### **Award BIOS Setup**

The Award BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in a battery-backed RAM (CMOS RAM) that retains the Setup information each time the power is turned off.

#### **5.1 Entering Setup**

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power On Self Test).

**TO ENTER SETUP PRESS DEL KEY**

If the message disappears before you respond and you still wish to enter Setup, restart the system and try again. This is possible by turning the system power to OFF then to ON, pressing the "RESET" button on the system case, or by simultaneously pressing <Ctrl>, <Alt>, and <Del> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will be prompted with the following:

**PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP**

## 5.2 Control Keys

|                |   |
|----------------|---|
| Up arrow       | Moves cursor to the previous item   |
| Down arrow     | Moves cursor to the next item   |
| Left arrow     | Moves cursor to the item on the left hand   |
| Right arrow    | Move to the item in the right hand  |
| Esc key        | Main Menu -- Quits and deletes changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exits current page and returns to Main Menu |
| PgUp/"+" key   | Increases the numeric value or makes changes  |
| PgDn/"-" key   | Decreases the numeric value or makes changes  |
| F1 key         | General help, only for Status Page Setup Menu and Option Page Setup Menu  |
| (Shift) F2 key | Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward  |
| F3 key         | Reserved  |
| F4 key         | Reserved  |
| F5 key         | Restores the previous CMOS value from CMOS, only for Option Page Setup Menu   |
| F6 key         | Loads the default CMOS value from BIOS default table, only for Option Page Setup Menu   |
| F7 key         | Loads the Setup default , only for Option Page Setup Menu   |
| F8 key         | Reserved  |
| F9 key         | Reserved  |
| F10 key        | Saves all the CMOS changes, only for Main Menu  |

## 5.3 Getting Help

- **Main Menu**  
The on-line description of the highlighted setup function is displayed at the bottom of the screen.
- **Status Page Setup Menu/Option Page Setup Menu**  
Press <F1> to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.

## 5.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use the arrow keys to select the setup function you intend to configure then press <Enter> to accept or enter its sub-menu.

**ROM PCI/ISA BIOS (SBC8157)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.**

|                         |                           |
|-------------------------|---------------------------|
| STANDARD CMOS SETUP     | INTEGRATED PERIPHERALS    |
| BIOS FEATURES SETUP     | SUPERVISOR PASSWORD       |
| CHIPSET FEATURES SETUP  | USER PASSWORD             |
| POWER MANAGEMENT SETUP  | IDE HDD AUTO DETECTION    |
| PNP/PCI CONFIGURATION   | HDD LOW LEVEL FORMAT      |
| LOAD BIOS DEFAULTS      | SAVE & EXIT SETUP         |
| LOAD SETUP DEFAULTS     | EXIT WITHOUT SAVING       |
| Esc : Quit              | ↑ ↓ → ← : Select Item     |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |

- **Standard CMOS Setup**  
This setup option includes all the items in a standard compatible BIOS.
- **BIOS Features Setup**  
This setup page includes all the items of Award special enhanced features.
- **Chipset Features Setup**  
This setup option includes all the items of chipset special features.
- **Power Management Setup**  
This category determines the power consumption of the system after selecting its items.
- **PnP/PCI Configuration**  
This category specifies the assignment of all IRQs and DMAs.

- **Load BIOS Defaults**  
BIOS defaults indicate the most appropriate values of the system parameter in which the system can operate at a minimum performance.
- **Load Setup Defaults**  
Chipset defaults indicate the values required by the system for maximum performance.
- **Integrated Peripherals**  
This page allows you to set up all the on board I/O controllers like IDE, FDC, etc..
- **Supervisor / User Passwords**  
Changes, sets or disables password of Supervisor or User. It allows you to restrict access to the system and Setup, or just to Setup.
- **IDE HDD Auto Detection**  
Automatically configures hard disk parameters.
- **HDD Low Level Format**  
Hard disk low level format utility.
- **Save & Exit Setup**  
Saves CMOS value changes to CMOS and exits setup.
- **Exit Without Saving**  
Abandons all CMOS value changes and exits setup.



## 5.5 Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

**ROM PCI/ISA BIOS (SBC8157)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.**

| Date (mm:dd:yy) :        |      | Fri, Jul 18 2000          |      |      |                          |                          |        |        |  |
|--------------------------|------|---------------------------|------|------|--------------------------|--------------------------|--------|--------|--|
| Time (hh:mm:ss) :        |      | 00:00:00                  |      |      |                          |                          |        |        |  |
| HARD DISKS               | TYPE | SIZE                      | CYLS | HEAD | PRECOMP                  | LANDZ                    | SECTOR | MODE   |  |
| Primary Master:          | Auto | 0                         | 0    | 0    | 0                        | 0                        | 0      | NORMAL |  |
| Primary Slave:           | Auto | 0                         | 0    | 0    | 0                        | 0                        | 0      | NORMAL |  |
| Secondary Master:        | Auto | 0                         | 0    | 0    | 0                        | 0                        | 0      | NORMAL |  |
| Secondary Slave:         | Auto | 0                         | 0    | 0    | 0                        | 0                        | 0      | NORMAL |  |
| Drive A : 1.44M , 3.5 in |      |                           |      |      |                          |                          |        |        |  |
| Drive B : None           |      |                           |      |      |                          |                          |        |        |  |
| Video : EGA / VGA        |      |                           |      |      |                          | Base Memory : 640K       |        |        |  |
| Halt On : All Errors     |      |                           |      |      |                          | Extended Memory : 14336K |        |        |  |
|                          |      |                           |      |      |                          | Other Memory : 384K      |        |        |  |
|                          |      |                           |      |      |                          | Total Memory : 15360K    |        |        |  |
| ESC : Quit               |      | ↑ ↓ → ← : Select Item     |      |      | PU / PD / + / - : Modify |                          |        |        |  |
| F1 : Help                |      | (Shift) F2 : Change Color |      |      |                          |                          |        |        |  |

- **Date**

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

|       |   |
|-------|---|
| day   | The day of week, from Sun to Sat, determined by the BIOS, is read only                                |
| date  | The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key |
| month | The month, Jan through Dec.   |
| year  | The year, depends on the year of BIOS   |

- **Time**

The time format is <hour> <minute> <second> accepting either function key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **Primary Master/Primary Slave/Secondary Master/Secondary Slave**

The categories identify the types of one channel that have been installed in the computer. There are 45 predefined types and 2 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.

Press <PgUp>/<+> or <PgDn>/<-> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information within this category. If your hard disk drive type does not match or is not listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, select "Type 1".

If the controller of HDD interface is SCSI, select "None".

If the controller of HDD interface is CD-ROM, select "None".

|         |                     |          |                   |
|---------|---------------------|----------|-------------------|
| CYLS.   | number of cylinders | LANDZONE | landing zone      |
| HEADS   | number of heads     | SECTORS  | number of sectors |
| PRECOMP | write precom        | MODE     | HDD access mode   |

If there is no hard disk drive installed, select NONE and press <Enter>.

● **Drive A type/Drive B type**

The category identifies the types of floppy disk drive A or drive B installed in the computer.

|               |  |
|---------------|--|
| None          | No floppy drive installed                            |
| 360K, 5.25 in | 5.25 inch PC-type standard drive; 360Kb capacity     |
| 1.2M, 5.25 in | 5.25 inch AT-type high-density drive; 1.2MB capacity |
| 720K, 3.5 in  | 3.5 inch double-sided drive; 720Kb capacity          |
| 1.44M, 3.5 in | 3.5 inch double-sided drive; 1.44MB capacity         |
| 2.88M, 3.5 in | 3.5 inch double-sided drive; 2.88MB capacity         |

● **Video**

The category selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup. You have two ways to boot up the system:

1. When VGA as primary and monochrome as secondary, the selection for the video type is "VGA Mode".
2. When monochrome as primary and VGA as secondary, the selection of the video type is "Monochrome Mode".

|         |  |
|---------|--|
| EGA/VGA | Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters. |
| CGA 40  | Color Graphics Adapter, power up in 40 column mode   |
| CGA 80  | Color Graphics Adapter, power up in 80 column mode   |
| MONO    | Monochrome adapter, includes high resolution monochrome adapters                             |

- **Error halt**

The category determines whether the computer will stop if an error is detected during power up.

|                   |   |
|-------------------|---|
| No errors         | Whenever the BIOS detects a non-fatal error, the system will halt and you will be prompted. |
| All errors        | The system boot will not stop for any error detected.                                       |
| All, But Keyboard | System boot will not stop for a keyboard error; it will stop for all other errors.          |
| All, But Diskette | System boot will not stop for a disk error; it will stop for all other errors.              |
| All, But Disk/Key | System boot will not stop for a keyboard or disk error; it will stop for all other errors.  |

- **Memory**

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

- **Base Memory**

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

- **Extended Memory**

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

- **Other Memory**

This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. Most use for this area is Shadow RAM.

- **Total Memory**

System total memory is the sum of basic memory, extended memory, and other memory.

## 5.6 BIOS Features Setup Menu

**ROM PCI/ISA BIOS (SBC8157)  
BIOS FEATURES 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 |
| Quick Power On Self Test   | : Enabled  | D0000-D3FFF Shadow                         | : Disabled |
| Boot Sequence              | : C,A,SCSI | D4000-D7FFF Shadow                         | : Disabled |
| Swap Floppy Drive          | : Disabled | D8000-DBFFF Shadow                         | : Disabled |
| Boot Up Floppy Seek        | : Disabled | DC000-DFFFF Shadow                         | : Disabled |
| Boot Up NumLock Status     | : On       | Cyrix 6x86/MII CPUID                       | : Enabled  |
| Boot Up System Speed       | : High     |  |            |
| Gate A20 Option            | : Fast     |  |            |
| Typematic Rate Setting     | : Disabled | LCD Type : (Type 6) 640x480                | 24 TFT     |
| Typematic Rate (Chars/Sec) | : 6        | VGA Expansion(Full Screen)                 | : Disable  |
| Typematic Delay (Msec)     | : 250      | Display Type During POST                   | : CRT Only |
| Security Option            | : Setup    | Display Type After POST                    | : CRT Only |
| PCI/VGA Palette Snoop      | : Disabled |  |            |
| OS Select for DRAM >64MB   | : Non-OS2  |  |            |
|                            |            | ESC : Quit           ↑ ↓ → ← : Select Item |            |
|                            |            | F1 : Help            PU/PD/+/- : Modify    |            |
|                            |            | F5 : Old Values     (Shift) F2 : Color     |            |
|                            |            | F6 : Load BIOS Defaults                    |            |
|                            |            | F7 : Load Setup Defaults                   |            |

- Virus Warning**  
 This option flashes on the screen. During and after the system boot up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system with the following message. You can run an anti-virus program to locate the problem.

**! WARNING !**  
*Disk boot sector is to be modified  
 Type "Y" to accept write or "N" to abort write  
 Award Software, Inc.*

|          |   |
|----------|---|
| Enabled  | Activates automatically when the system boots up causing a warning message to appear when there is an attempt to access the boot sector or hard disk partition table. |
| Disabled | No warning message will appear when attempts to access the boot sector or hard disk partition table are made.   |

NOTE: *This function is only available with DOS and other operating systems that do not trap INT13.*

- **CPU Internal Cache/External Cache**

These two options speed up memory access. However, it depends on the CPU/chipset design. CPUs with no built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

|          |               |
|----------|---------------|
| Enabled  | Enable cache  |
| Disabled | Disable cache |

- **Quick Power On Self Test**

This option speeds up Power On Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST.

|          |                   |
|----------|-------------------|
| Enabled  | Enable Quick POST |
| Disabled | Normal POST       |

- **Boot Sequence**

The original IBM PCs load 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, the BIOS now offers 11 different boot sequence options of three drives each. In addition to the traditional drives A and C, options include IDE hard drives D, E, and F; plus a SCSI hard drive and a CD-ROM drive. This category determines from which drive the computer searches first for the disk operating system (i.e., DOS).

|           |   |
|-----------|---|
| A,C,SCSI  | System searches for the operating system from the floppy disk drive. If it fails, it will search from the hard disk drive. If operating system is still not found, it'll seek from the SCSI device.           |
| C,A,SCSI  | System searches for the operating system from the hard disk drive first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the SCSI device.     |
| C,CDROM,A | System searches for the operating system from the hard disk drive first. If it fails, it will search from the IDE CDROM drive. If operating system is still not found, it'll seek from the floppy disk drive. |
| CDROM,C,A | System searches for the operating system from the IDE CDROM drive first. If it fails, it will search from the hard disk drive. If operating system is still not found, it'll seek from the floppy disk drive. |
| D,A,SCSI  | System searches for the operating system from the second IDE HDD first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the SCSI device.      |

|          |  |
|----------|--|
| E,A,SCSI | System searches for the operating system from the third IDE HDD first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the SCSI device.  |
| F,A,SCSI | System searches for the operating system from the fourth IDE HDD first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the SCSI device. |
| SCSI,A,C | System searches for the operating system from the SCSI device first. If it fails, it will search from the floppy disk drive. If operating system is still not found, it'll seek from the first IDE HDD.  |
| SCSI,C,A | System searches for the operating system from the SCSI device first. If it fails, it will search from the first IDE HDD. If operating system is still not found, it'll seek from the floppy disk drive.  |
| C only   | System only searches for the operating system from the first IDE HDD.  |
| LS/ZIP,C | System searches for the operating system from the 120MB LS floppy or the 100MB ZIP drive first. If it fails, it'll search from the first IDE HDD.  |

- **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**

During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks, installed in the system. 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks.

|          |   |
|----------|---|
| Enabled  | BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks. |
| Disabled | BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K.                    |

- **Boot Up NumLock Status**

This option enables and disables the numberlock function of the keypad.

|     |   |
|-----|---|
| On  | Keypad functions confine with numbers                                       |
| Off | Keypad functions convert to special functions (i.e., left/right arrow keys) |

- **Boot Up System Speed**

It selects the default system speed - the speed that the system will operate immediately after power up.

|      |                        |
|------|------------------------|
| High | Sets the speed to high |
| Low  | Sets the speed to low  |

- **Gate A20 Option**

|        |  |
|--------|--|
| Normal | The A20 signal is controlled by keyboard controller or chipset hardware. |
| Fast   | The A20 signal is controlled by Port 92 or chipset specific method.      |

- **Typematic Rate Setting**

This determines the typematic rate of the keyboard.

|          |  |
|----------|--|
| Enabled  | Enable typematic rate and typematic delay programming  |
| Disabled | Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is controlled by keyboard. |

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

This option refers to the number of characters the keyboard can type per second.

|    |                          |
|----|--------------------------|
| 6  | 6 characters per second  |
| 8  | 8 characters per second  |
| 10 | 10 characters per second |
| 12 | 12 characters per second |
| 15 | 15 characters per second |
| 20 | 20 characters per second |
| 24 | 24 characters per second |
| 30 | 30 characters per second |



- **Typematic Delay (Msec)**

This option sets the display time interval from the first to the second character when holding a key.

|      |           |
|------|-----------|
| 250  | 250 msec  |
| 500  | 500 msec  |
| 750  | 750 msec  |
| 1000 | 1000 msec |

- **Security Option**

This item allows you to limit access to the system and Setup, or just to Setup.

|        |   |
|--------|---|
| System | The system will not boot and access to Setup will be denied if the incorrect password is 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, just press <Enter> and it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **PCI/VGA Palette Snoop**

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

- **OS Select for DRAM >64**

This segment is specifically created for OS/2 when DRAM is larger than 64MB. If your operating system is OS/2 and DRAM used is larger the 64MB, you have to select "OS 2", otherwise (under non-OS2), default is NON-OS2.

- **Video BIOS Shadow**

Video shadowing increases the video speed by copying the video BIOS into RAM. However, it is still optional depending on the chipset design.

|          |                                  |
|----------|----------------------------------|
| Enabled  | Video BIOS shadowing is enabled  |
| Disabled | Video BIOS shadowing is disabled |

- **C8000 - CBFFF Shadow/DC000 - DFFFF Shadow**  
These options determine whether optional ROM will be copied to RAM by 16K byte or 32K byte per/unit.

|          |                             |
|----------|-----------------------------|
| Enabled  | Optional shadow is enabled  |
| Disabled | Optional shadow is disabled |

- NOTE:
1. For C8000-DFFFF option-ROM on PCI BIOS – BIOS automatically enables the shadow RAM. User does not have to select the item.
  2. IDE second channel control:  
**Enable:** enables secondary IDE port and BIOS will assign IRQ15 for this port.  
**Disable:** disables secondary IDE port and IRQ15 is available for other device(s). The item is optional only for PCI BIOS.
  3. Some sound cards have an onboard CD-ROM controller that uses IDE Secondary Port. To avoid PCI IDE conflict, disable the IDE secondary channel control so that the CD-ROM may work.

- **Cyrix 6x86/MII CPUID**  
This option enables/disables the Cyrix 6x86/MII CPU MMX instruction.

### 5.6.1 Onboard VGA Functions

The following options allow the overriding of the VGA BIOS settings integrated in the core chipset of SBC8157 Series. Take note that the settings on the following will not take effect when a VGA peripheral card is connected to the system.

- **LCD Type**

Although the system chipset already supports VGA and LCD alike, BIOS Features Setup still expands this feature further with the option to set any of the 15 LCD types. The available options are:

|               |                   |      |
|---------------|-------------------|------|
| ■ Type 1/13   | 1024 x 768        | DSTN |
| ■ Type 2      | 1280 x 1024       | TFT  |
| ■ Type 3      | 640 x 480         | DSTN |
| ■ Type 4      | 800 x 600         | DSTN |
| ■ Type 5      | 640 x 480 (16bit) | TFT  |
| ■ Type 6      | 640 x 480 (24bit) | TFT  |
| ■ Type 7      | 1024 x 768        | TFT  |
| ■ Type 8/9/10 | 800 x 600         | TFT  |
| ■ Type 11/12  | 800 x 600         | DSTN |
| ■ Type 14     | 1280 x 1024       | DSTN |
| ■ Type 15     | 1024 x 600        | DSTN |

- **VGA Expansion (Full Screen)**

This option allows you to enlarge application screens to full screen scale onto your display. However this option is not inversely compatible, rendering no change when applications screens have resolutions larger than the display resolution. The available options are Enabled and Disabled.

- **Display Type During/After POST**

This item configures the viewing area for the POST sequence. When configured to the *incorrect display setting* or *Both*, it blankets the POST sequence from being viewed. If you select *Default*, this option is useless and follows the VGA BIOS settings. The available options are CRT Only, LCD Only, Both, and Default.

## 5.7 Chipset Features Setup Menu

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.

**ROM PCI/ISA BIOS (SBC8157)  
CHIPSET FEATURES SETUP  
AWARD SOFTWARE, INC.**

|                           |            |                                       |                       |
|---------------------------|------------|---------------------------------------|-----------------------|
| Auto Configuration        | : Enabled  | CPU Warning Temperature               | : Disabled            |
| SDRAM(CAS Lat/RAS-to-CAS) | : 3/3      | Current System Temp.                  | : 35°C/95°F           |
| SDRAM Speculative Read    | : Disabled | Current CPU1 Temperature              | : 38°C/100°F          |
| System BIOS Cacheable     | : Disabled | Current CPUFAN1 Speed                 | : 0 RPM               |
| Video BIOS Cacheable      | : Disabled | Current CPUFAN2 Speed                 | : 0 RPM               |
| 8 Bit I/O Recovery Time   | : 1        | CPUcore :                             | 2.19V CPUi/o : 3.40V  |
| 16 Bit I/O Recovery Time  | : 2        | +3.4V :                               | 3.40V + 5 V : 4.99V   |
| Memory Hole At 15M-16M    | : Disabled | +12 V :                               | 11.97V -12 V :-11.42V |
| PCI 2.1 Compliance        | : Disabled | - 5 V :                               | -5.14V                |
|                           |            | ESC : Quit    ↑ ↓ → ← : Select Item   |                       |
|                           |            | F1 : Help    PU/PD/+/- : Modify       |                       |
|                           |            | F5 : Old Values (Shift)    F2 : Color |                       |
|                           |            | F6 : Load BIOS Defaults               |                       |
|                           |            | F7 : Load Setup Defaults              |                       |

- Auto Configuration**  
Auto Configuration selects predetermined optimal values of chipset parameters. When disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is enabled.
- SDRAM (CAS Lat/RAS-to-CAS)**  
You can select a combination of CAS latency and RAS-to-CAS delay in HCLKs of 2/2 or 3/3. The board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DAM or the installed CPU.

- **SDRAM Speculative Read**  
The chipset can "speculate" on a DRAM read address, thus reducing read latencies. The CPU issues a read request containing the data memory address. The DRAM controller receives the request. When this field is Enabled, the controller issues the read command slightly before it has finished decoding the data address.
- **DRAM Timing**  
The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.
- **System BIOS Cacheable**  
Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
- **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 writes to this memory area, a system error may result.
- **8/16 Bit I/O Recovery Time**  
The I/O recovery mechanism adds bus clock cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is so much faster than the ISA bus.  
These two fields let you add recovery time (in bus clock cycles) for 16-bit and 8-bit I/O.
- **Memory Hole at 15M-16M**  
You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.
- **PCI 2.1 Compliance**  
Concurrent PCI allows multiple PCI transfers from the PCI master buses to memory to CPU.
- **Power Supply Type**  
This item allows you identify the type of power supply installed on your system.

- **CPU Warning Temperature**  
This option lets you set the CPU temperature limit where the system will produce a warning indicating CPU temperature has already exceeded.
- **Current CPU Temperature**  
This is an auto feature of the Award BIOS which displays the actual CPU temperature level inside your system.
- **Current CPU FAN1/FAN2 Speed**  
These optional and read-only fields show the current speeds in RPM (revolution per minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.
- **VCCP / VTT / VCC3**  
These optional and read-only fields show the current voltages in the voltage regulators and power supply as monitored by the hardware monitoring IC.

## 5.8 Power Management Setup

The Power Management Setup screen appears like this:

**ROM PCI/ISA BIOS (SBC8157)  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.**

|                       |                  |                                  |                          |
|-----------------------|------------------|----------------------------------|--------------------------|
| Power Management      | : Disabled       | ** Reload Global Timer Events ** |                          |
| PM Control by APM     | : Yes            | IRQ[3-7,9-15],NMI                | : Enabled                |
| 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             | : Disabled       | Secondary IDE 1                  | : Disabled               |
| Standby Mode          | : Disabled       | Floppy Disk                      | : Disabled               |
| Suspend Mode          | : Disabled       | Serial Port                      | : Enabled                |
| HDD Power Down        | : Disabled       | Parallel Port                    | : Disabled               |
| Throttle Duty Cycle   | : 62.5%          |                                  |                          |
| ZZ Active in Suspend  | : Disabled       |                                  |                          |
| PCI/VGA Act-Monitor   | : Enabled        |                                  |                          |
| Soft-Off by PWR-BTTN  | : Instant-Off    | ESC: Quit                        | ↑↓→←: Select Item        |
| CPUFAN Off In Suspend | : Enabled        | F1 : Help                        | PU / PD / + / - : Modify |
| Modem Ring Wakeup     | : Enabled        | F5 : Old Values (Shift)          | F2 : Color               |
| PCI LAN Card Wakeup   | : Enabled        | F6 : Load BIOS Defaults          |                          |
| Onboard LAN Wakeup    | : Disabled       | F7 : Load Setup Defaults         |                          |
| IRQ8 Break Suspend    | : Disabled       |                                  |                          |

- **Power Management**

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

|             |  |
|-------------|--|
| Max Saving  | Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode. |
| User Define | Sets each mode individually. Select time-out periods in the PM Timers section, following.      |
| Min Saving  | Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).       |
| Disabled    | Default value  |

- **PM Control by APM**

If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings.

|     |  |
|-----|--|
| No  | System BIOS will ignore APM when power managing the system   |
| Yes | System BIOS will wait for APM's prompt before it enters any PM mode (i.e., DOZE, STANDBY or SUSPEND).<br><b>Note:</b> If APM is installed or if there is a task running, even when the timer has timed out, the APM will not prompt the BIOS to put the system into any power saving mode! |

NOTE: *If APM is not installed, this option has no effect.*

- **Video Off Method**

Determines the manner in which the monitor is blanked.

|                |   |
|----------------|---|
| V/H SYNC+Blank | Turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer   |
| DPMS           | Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values. |
| Blank Screen   | System only writes blanks to the video buffer.  |

- **Video Off After**

As the system moves from lesser to greater power-saving modes, select the mode in which you want the monitor to blank off.

|         |  |
|---------|--|
| NA      | System BIOS will never turn off the screen |
| Suspend | Screen off when system is in SUSPEND mode  |
| Standby | Screen off when system is in STANDBY mode  |
| Doze    | Screen off when system is in DOZE mode     |

NOTE: *Green monitors detect the V/H SYNC signals to turn off its electron gun*

- **Modem Use IRQ**

|                           |   |
|---------------------------|---|
| 3, 4, 5, 7, 9, 10, 11, NA | For external modem, 3 or 4 will be used for card type modem. It is up to card definition. |
|---------------------------|---|



- **Doze Mode**

After the selected period of system inactivity (1 minute to 1 hour), the CPU clock runs at slower speed while all other devices still operate at full speed.

|                                   |  |
|-----------------------------------|--|
| Disabled                          | System will never enter doze mode                                      |
| 1/2/4/6/8/10/20/30/40<br>Min/1 Hr | Defines the continuous idle time before the system entering DOZE mode. |

- **Standby Mode**

After the selected period of system inactivity (1 minute to 1 hour), the fixed disk drive and the video shut off while all other devices still operate at full speed.

|                                   |   |
|-----------------------------------|---|
| Disabled                          | System will never enter STANDBY mode  |
| 1/2/4/6/8/10/20/30/40<br>Min/1 Hr | Defines the continuous idle time before the system entering STANDBY mode.<br>If any item defined in (J) is enabled & active, STANDBY timer will be reloaded |

- **Suspend Mode**

After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off.

|                                   |   |
|-----------------------------------|---|
| Disabled                          | System will never enter SUSPEND mode  |
| 1/2/4/6/8/10/20/30/40<br>Min/1 Hr | Defines the continuous idle time before the system entering SUSPEND mode.<br>If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded |

- **HDD Power Down**

After the selected period of drive inactivity (1 to 15 minutes), the hard disk drive powers down while all other devices remain active.

|   |  |
|---|--|
| Disabled                                    | HDD's motor will not power OFF.  |
| 1/2/3/4/5/6/7/8/9/10/<br>11/12/13/14/15 Min | Defines the continuous HDD idle time before the HDD enters power saving mode (motor OFF) |

- **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.

- **ZZ Active in Suspend**

When Enabled, the ZZ signal is active during Suspend mode.

- **PCI /VGA Act-Monitor**  
When Enabled, any video activity restarts the global timer for Standby mode.
- **Soft-Off by PWR-BTTN**  
This option only works with systems using an ATX power supply. It also allows the user to define which type of soft power OFF sequence the system will follow.

|              |  |
|--------------|--|
| Instant-Off  | This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF  |
| Delay 4 Sec. | Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once. |

- **CPUFAN Off in Suspend**  
When Enabled, the CPU fan turns off during Suspend mode.
- **Modem Ring Wakeup**  
This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem.
- **PCI LAN Card/Onboard LAN Wakeup**  
Wake On LAN allows your computer to be booted from another computer via a network by sending a wakeup frame or signal. These options enables or disables the wakeup function connected to the Onboard LAN chip or external LAN card connector (PCI LAN Card Wakeup).
- **IRQ8 Break Suspend**  
You can turn on or off 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 below restarts the global time for Standby mode.

- **IRQ3 -7, 9-15, NMI**    The default value is "Enabled".
- Primary IDE 0**        The default value is "Disabled".
- Primary IDE 1**        The default value is "Disabled".
- Secondary IDE 0**      The default value is "Disabled".
- Secondary IDE 1**      The default value is "Disabled".
- Floppy Disk**          The default value is "Disabled".
- Serial Port**          The default value is "Enabled".
- Parallel Port**        The default value is "Disabled".

## 5.9 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI 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. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

**ROM PCI/ISA BIOS (SBC8157)  
PNP/PCI CONFIGURATION SETUP  
AWARD SOFTWARE, INC.**

|  |  |
|--|--|
| PNP OS Installed        : No<br>Resources Controlled By    : Auto<br>Reset Configuration Data    : Disabled  | PCI IDE IRQ Map To        : ISA<br><br>Assign IRQ For VGA        : Disabled<br>Assign IRQ For USB        : Enabled |
| ESC: Quit    ↑↓→←: Select Item<br>F1 : Help    PU / PD / + / - : Modify<br>F5 : Old Values    (Shift)F2 : Color<br>F6 : Load BIOS Defaults<br>F7 : Load Setup Defaults |  |

- **PNP OS Installed**  
Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).

- **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), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them.
- **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.
- **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.
- **Assign IRQ for USB**  
This item allows you to assign IRQ for the USB interface.

## 5.10 Integrated Peripherals

**ROM PCI/ISA BIOS (SBC8157)  
INTEGRATED PERIPHERALS  
AWARD SOFTWARE, INC.**

|                           |              |                          |                          |
|---------------------------|--------------|--------------------------|--------------------------|
| IDE HDD Block Mode        | :Enabled     | UART Mode Select         | : Normal                 |
| IDE Primary Master PIO    | :Auto        | UART2 Duplex Mode        | : Half                   |
| IDE Primary Slave PIO     | :Auto        | RxD, TxD Active          | : Hi, Lo                 |
| IDE Primary Master UDMA   | :Auto        |                          |                          |
| IDE Primary Slave UDMA    | :Auto        |                          |                          |
| IDE Secondary Master PIO  | :Auto        | IR Transmission delay    | : Enabled                |
| IDE Secondary Slave PIO   | :Auto        | Onboard Parallel Port    | : 378/IRQ7               |
| IDE Secondary Master UDMA | :Auto        | Parallel Port Mode       | : SPP                    |
| IDE Secondary Slave UDMA  | :Auto        |                          |                          |
| On-Chip Primary PCI IDE   | :Enabled     |                          |                          |
| On-Chip Secondary PCI IDE | :Enabled     |                          |                          |
| USB Keyboard Support      | :Disabled    |                          |                          |
| POWER ON Function         | :BUTTON ONLY |                          |                          |
| KB Power ON Password      | :Enter       |                          |                          |
| Hot Key Power ON          | :Ctrl-F1     | ESC: Quit                | ↑↓→←: Select Item        |
| KBC input clock           | :8 MHz       | F1 : Help                | PU / PD / + / - : Modify |
| Onboard FDC Controller    | :Enabled     | F5 : Old Values          | (Shift)F2 : Color        |
| Onboard Serial Port 1     | :3F8/IRQ4    | F6 : Load BIOS Defaults  |                          |
| Onboard Serial Port 2     | :2F8/IRQ3    | F7 : Load Setup Defaults |                          |

The four items related to the WDT describe the set up of the Watchdog Timer (WDT), please refer to the Appendix for details.

- **IDE HDD Block Mode**  
Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
- **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.

- **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.

NOTE: *Choosing Disabled for these options will automatically remove the IDE Primary Master/Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*

- **USB Keyboard Support**  
Select Enabled if your system contains a USB controller and you have a USB keyboard.

- **POWER ON Function**  
This option allows users to select the type of power ON sequence for the system to follow.

|             |  |
|-------------|--|
| BUTTON-ONLY | Follows the conventional way of turning OFF system power (via power button).   |
| Password    | Upon selecting this option, the KB POWER ON Password line appears. Press <Enter> and you'll be prompted to enter and confirm a password of your choice.<br>After setting the password, succeeding attempts to power ON the system will result to null. For system to activate, user must input the password via keyboard then press <Enter>. |
| Hot KEY     | This option is very similar with that of Password. Hot-key combinations range from Ctrl-F1 to Ctrl-F12. User may define this combination from the Hot key Power ON option.   |

- **KBC input clock**  
This item sets the input clock for the keyboard controller.
- **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 port 1/2**  
Select an address and corresponding interrupt for the first and second serial ports.
- **UART Mode Select**  
The second serial port offers these infrared interface modes:
  1. IrDA
  2. ASKIR IrDA-compliant serial infrared port
  3. Normal

NOTE: *The UART Mode Select will not appear on the menu once you disable the setting of Onboard Serial Port 2.*

When UART Mode Select is set as ASKIR or IrDA, the options RxD, TxD Active and IR Transmission delay will appear.

- **Onboard Parallel Port**  
Select a logical LPT port name and matching address for the physical parallel (printer) port.

NOTE: *Choosing Disabled for this option will remove the Parallel Port Mode option on the menu.*
- **Parallel Port Mode**  
Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field.

NOTE: *Selecting EPP on this option will allow selection to the EPP Mode (EPP1.7, EPP1.9)  
ECP mode selection will provide option for ECP Mode Use DMA.  
Choosing ECP+EPP modes will provide selections for both EPP Mode Select and ECP Mode Use DMA.*

## **5.11 Supervisor/User Password Setting**

You can set either supervisor or user password, or both of them. The differences between are:

1. **supervisor password:** can enter and change the options of the setup menus.
2. **user password:** just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

### **ENTER PASSWORD:**

Type the password with eight characters at most, and press <Enter>. The password typed will now clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

### **PASSWORD DISABLED.**

When a password is enabled, you have to type it every time you enter Setup. This prevents any unauthorized person from changing your system configuration.

Additionally when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during boot up and entry into Setup. If set as "Setup", prompting will only occur prior to entering Setup.



## 5.12 IDE HDD Auto Detection

The Enhance IDE feature is included in all Award BIOS. The following is a brief description of this feature.

### 1. Setup Changes

<I> Auto-detection

BIOS setup will display all possible modes supported by the HDD including NORMAL, LBA & LARGE.

If HDD does not support LBA modes, no 'LBA' option will be shown.

Users can select a mode appropriate for them.

ROM/PCI/ISA BOPS (2XXXXXXX)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

| HARD DISKS                                  | TYPE | SIZE | CYLS  | HEAD    | PRECOMP  | LANDZ   | SECTOR | MODE |
|---|------|------|-------|---------|----------|---------|--------|------|
| Primary Master :                            |      |      |       |         |          |         |        |      |
| Select Primary Master Option (N = Skip) : N |      |      |       |         |          |         |        |      |
| OPTION                                      | SIZE | CYLS | HEADS | PRECOMP | LANDZONE | SECTORS | MODE   |      |
| 1 (Y)                                       | 516  | 1120 | 16    | 65535   | 1119     | 59      | NORMAL |      |
| 2   | 516  | 524  | 32    | 0       | 1119     | 63      | LBA    |      |
| 3   | 516  | 560  | 32    | 65535   | 1119     | 59      | LARGE  |      |

|                             | CYLS | Heads | Precomp | Landzone | Sector | Mode   |
|-----------------------------|------|-------|---------|----------|--------|--------|
| Primary Master :User(516MB) | 1120 | 16    | 65535   | 1119     | 59     | NORMAL |
| Primary Slave :None (203MB) | 684  | 16    | 65535   | 685      | 38     | -----  |
| Secondary Master :          | None | 0     | 0       | 0        | 0      | 0 0    |
| Secondary Slave :           | None | 0     | 0       | 0        | 0      | 0 0    |

When HDD type is in 'user' type, the "MODE" option will be open for user to select HDD mode.

### 2. HDD Modes

The Award BIOS supports 3 HDD modes : NORMAL, LBA & LARGE

■ **NORMAL mode**

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, head & sectors for NORMAL mode are 1024, 16 & 63.

$$\begin{array}{r} \text{no. Cylinder} \quad \quad \quad ( \quad 1024) \\ \times \text{ no. Head} \quad \quad \quad ( \quad 16) \\ \times \text{ no. Sector} \quad \quad \quad ( \quad 63) \\ \hline \times \text{ no. per sector} \quad \quad ( \quad 512) \\ \hline 528 \text{ Megabytes} \end{array}$$

If user sets his HDD to NORMAL mode, the maximum accessible HDD size will be 528MB even though its physical size may be greater than that!

■ **LBA (Logical Block Addressing) mode**

A new HDD accessing method to overcome the 528MB bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder number into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4GB which is obtained by the following formula:

$$\begin{array}{r} \text{no. Cylinder} \quad \quad \quad ( \quad 1024) \\ \times \text{ no. Head} \quad \quad \quad ( \quad 255) \\ \times \text{ no. Sector} \quad \quad \quad ( \quad 63) \\ \hline \times \text{ bytes per sector} \quad \quad ( \quad 512) \\ \hline 814 \text{ Gigabytes} \end{array}$$

■ **LARGE mode**

Extended HDD access mode supported by Award Software.

Some IDE HDDs contain more than 1024 cylinder without

LBA support (in some cases, user does not want LBA).  
The Award BIOS provides another alternative to support these kinds of HDD!

Example of LARGE mode:

| <u>CYLS</u> | <u>HEADS</u> | <u>SECTOR</u> | <u>MODE</u> |
|-------------|--------------|---------------|-------------|
| 1120        | 16           | 59            | NORMAL      |
| 560         | 32           | 59            | LARGE       |

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address!

Maximum HDD size:

|       |                  |             |
|-------|------------------|-------------|
|       | no. Cylinder     | ( 1024)     |
| x     | no. Head         | ( 32)       |
| x     | no. Sector       | ( 63)       |
| x     | bytes per sector | ( 512)      |
| <hr/> |                  |             |
|       |                  | 1 Gigabytes |

### 3. Remarks

To support LBA or LARGE mode of HDDs, there must be some software involved. All these software are located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System that replaces the whole INT 13h.

## 5.13 Hard Disk Low Level Format Utility

This Award Low-Level-Format Utility is designed as a tool to save your time formatting your hard disk. The utility automatically looks for the necessary information of the drive you selected. This utility also searches for bad tracks and lists them for your reference.

Shown below is the Main Menu after you enter into the Award Low-Level-Format Utility.

| Hard Disk Low Level Format Utility                                     |      | BAD TRACKS TABLE |           |
|--|------|------------------|-----------|
|  |      | NO.              | CYLS HEAD |
| SELECT DRIVE<br>BAD TRACK LIST<br>PREFORMAT                            |      |                  |           |
| Current select drive is : C<br><br>DRIVE: C    CYLINDER : 0    HEAD: 0 |      |                  |           |
|  | Size | CYLS             | Head      |
| Primary Master:  | 0    | 0                | 0         |
| Primary Slave:   | 0    | 0                | 0         |
|  |      |                  | Precomp   |
|  |      |                  | 0         |
|  |      |                  | Landz     |
|  |      |                  | 0         |
|  |      |                  | Sector    |
|  |      |                  | 0         |
|  |      |                  | Mode      |
|  |      |                  | AUTO      |
|  |      |                  | AUTO      |
| Up/Down - Select item  |      | Enter - Accept   |           |
|  |      | ESC-Exit/Abort   |           |
| Copyright © Award Software, Inc. 1992-94 All Rights Reserved           |      |                  |           |

- **Control Keys**  
Use the Up and Down arrow keys to move around the selections displayed on the upper screen. Press <Enter> to accept the selection. Press <Esc> to abort the selection or exit the utility.
- **Select Drive**  
Select from installed hard disk drive C or D. Listed at the bottom of the screen is the drive automatically detected by the utility.
- **Bad Track List**
  - **Auto scan bad track**  
The utility will automatically scan bad tracks and list the bad tracks on the window at the right side of the screen.
  - **Add bad track**  
Directly type in the information of the known bad tracks on the window at the right side of the screen.

- **Modify bad track**  
Modify the information of the added bad tracks in the window at the right side of the screen.
- **Delete bad track**  
Delete the added bad tracks on the window at the right side of the screen.
- **Clear bad track table**  
Clear the whole bad track list on the window at the right side of the screen.
- **Preformat**
  - **Interleave**  
Select the interleave number of the hard disk drive you wish to perform low level format. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.
  - **Auto scan bad track**  
This allows the utility to scan first then format by each track.
  - **Start**  
Press <Y> to start low level format.

## **5.14 Power-On Boot**

After you have made all the changes to CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON or press the "RESET" button on the system case. You may also restart by simultaneously pressing the <Ctrl>, <Alt>, and <Delete> keys. Upon restarting the system, immediately press <Insert> to load the BIOS default CMOS values for boot up.

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## Chapter 6

### Display Drivers

The LCD/VGA chipset used on the SBC8157 Series is C&T 69000 which can drive a wide range of monochrome and color flat panels including Single-Drive (SS) and Dual-Panel, Dual Drive (DD) passive STN and active matrix TFT / MIM LCD, EL, and Plasma panels. The 69000 supports an additional 256Kx16 DRAM providing a 32-bit video memory bus and additional display memory to support resolution up to 1280x1024 in 256 colors, 800x600 in 256 colors, and 640x480 in 16M colors. The 69000 accelerator can support up to 64 gray scales on monochrome panels, up to 226, 981 colors on passive STN LCDs, and up to 16M colors on 24-bit active matrix LCDs. It also offers a variety of programmable features to optimize display quality, including tall font stretching, fast vertical centering and programmable vertical stretching in graphics for handling modes with less than 480 lines.

The 69000 is fully compatible with the VGA graphics standard at the register, gate, and BIOS levels. The manufacturer supplies fully VGA-compatible BIOS, end-user utilities and drivers for common application programs (e.g., Microsoft Windows™, OS/2, WordPerfect, Lotus, etc.). CHIPS' drivers for Windows include a Big Cursor setting and fast panning / scrolling capabilities.

Before you begin the driver software installation, be sure to make backup copies of the *Display Driver Diskettes*.

Make sure you know the version of the application for which you are installing drivers. Your *Display Driver Diskettes* contain drivers for several versions of certain applications. For your driver to operate properly, you must install the driver for your version of the application program.

## 6.1 Windows 3.1x

These drivers are designed to work with Microsoft Windows Version 3.1x. You may install these drivers either through Windows or in DOS.

### 6.1.1 Driver Installation - DOS Setup

- Step 1:* Install Windows as you normally do for a VGA display. Run Windows to make sure it is working correctly. Then exit from Windows.
- Step 2:* Place the Windows 3.1x *Display Driver Diskette* in drive A. Type **A: <ENTER>** to make it be the default drive. Type **SETUP <ENTER>** to run the driver SETUP program. Press any key to get to the application list. Using the arrow keys, select **Windows Version 3.1** and press the **<ENTER>** key. Press the **<ENTER>** key to select **All Resolutions**, then press **<END>** to begin the installation. At this point, you will be asked for the path to your Windows System directory (default C:\WINDOWS). When the installation is complete, press any key to continue. Press **<ESC>** followed by **Y** to exit to DOS.
- Step 3:* Change to the directory where you installed Windows (usually C:\WINDOWS).
- Step 4:* Type **SETUP <ENTER>** to run the Windows Setup program. It will show the current Windows configuration. Use the “up” arrow key to move to the *Display* line and press **<ENTER>**. A list of display drivers will be shown. Use the arrow keys to select one of the drivers starting with an asterisk (\*) and press **<ENTER>**.
- Step 5:* Follow the directions on the screen to complete the setup. In most cases, you may press **<ENTER>** to accept the suggested option. When Setup is done, it will return to DOS. Type **WIN <ENTER>** to start Windows with the new display driver.



### 6.1.2 Changing Display Drivers from DOS

To change display drivers from DOS, change to the Windows directory and run Setup, repeating steps 4 and 5 from the previous section. Besides the special display drivers marked by an asterisk (\*), you should be able to use the following standard drivers:

|           |                    |
|-----------|--------------------|
| VGA       | 640x480, 16 colors |
| Super VGA | 800x600, 16 colors |

### 6.1.3 Changing Display Drivers from Windows

To change display drivers from Windows, select the *Windows Setup* icon from the Main window. You will be shown the current setup configuration. Select *Change System Settings* from the Option menu. Click on the arrow at the end of the *Display* line. A list of display drivers will be shown. Click on the driver you want to select. Then, click on the *OK* button. Follow the directions to complete the setup.

### 6.1.4 Changing Color Schemes

After you change display drivers, you may notice that the color scheme used by Windows looks strange. This is because different drivers have different default colors. You can correct this by choosing the same color scheme or a new color scheme. First, select the *Control Panel* from the *Main* window. Select the *Color* icon. You will be shown the current color scheme. Choose a new color scheme and click the *OK* button.

## 6.2 Windows NT 3.5x

These drivers are designed to work with Microsoft Windows NT 3.5x

### 6.2.1 Driver Installation

- Step 1* : Install Windows NT as you normally would do for a VGA display. Run Windows NT Control Panel from the Main Group. Choose the **Display** option. In the Display Settings dialog box, click on *Change Display Type*. Click on *Change* from the Adapter Type in the Display Type dialog box. Click on *Other* in the Select Device dialog box.
- Step 2*: Place the *Windows NT Display Driver Diskette* in drive A. Press **<ENTER>** and the name of the driver, *Chips and Technologies Video Controller* will appear highlighted in the Models list box. Click on **INSTALL** to install the selected driver. Once the installation is complete, the system must be shut down and restarted.
- Step 3*: Upon restart, at the **Invalid Display Selection** message, click on *OK* and select the desired display settings from the Display Settings dialog box. The system must be shut down and restarted for the new settings to take effect.

## 6.3 OS/2

These drivers are designed to function with the OS/2 Version 3.0 ONLY

### 6.3.1 Driver Installation

Before installation of this display driver, the system display should be set to VGA mode. VGA is the default video mode enabled when OS/2 is installed.

If the current system primary display is not VGA, or if a previous version of this driver is being used, the system should first be returned to VGA mode. To restore VGA mode, use Selective Install and select VGA for Primary Display.

To install this driver, do the following steps:

- Step 1:* Open an OS/2 full screen or windowed session.
- Step 2:* Place the CHIPS 65550 Display Driver Diskette in drive A.

Type **A: <ENTER>** to make this the default drive.

Type **INSTALL A: C: <ENTER>**

Where A: is the floppy disk drive and C: is the hard disk partition containing \OS2

Once the Install Program is completed, do a system shutdown and reboot.

A log of the information output during the install can be found in <root>:\OS2\INSTALL\CTINSTL.LOG

- Step 3:* After the system has rebooted, open the System Setup folder and run Selective Install to install the new device driver and configure the video system.

Follow the instructions on the screen to set up the OS/2 display drivers in your system. First, select Primary Display from the System Configuration Window. From the list of Primary Display Adapter Types, select Chips and Technologies 65550 and then select *OK*.

After the program installation is completed, the display driver will be initialized for 640x480x256 Color. Shutdown and then reboot the system for the installed changes to take effect.

To switch to a different video resolution or color depth, do the following:

#### **Change Video Resolution**

*Step 4:* To change the screen resolution or color depth:

Open the System Setup folder, then open System. From the list of available screen resolutions, select a new resolution. Point to the title-bar icon and double click. See Changing Screen Resolution in OS/2 User's Guide for more information.

**NOTE:** *Always use the INSTALL.COM for the first installation of the video device drivers. Thereafter, perform Step 4 above when changing video resolutions.*

### **6.3.2 WIN-OS/2**

Please note the following limitations regarding WIN-OS/2.

- ✓ The WIN-OS/2 full screen session should be set to Enhanced Capability. The default setting is Standard Mode. If this setting is not changed, Windows will not run correctly.
- ✓ WIN-OS/2 should be started by selecting the WIN-OS/2 Full Screen Icon in the Command Prompts folder, or with the WIN command in a DOS Full Screen or OS/2 Full Screen session.
- ✓ Do not start WIN-OS/2 in a DOS or OS/2 Window. The system does not support the enhanced video mode being used in a window, and therefore will not run.
- ✓ When running a full screen WIN-OS/2 session, do not use

ALT-HOME to switch to Windows DOS session.

### **6.3.3 Driver Diskette Copy**

For proper installation of OS/2 drivers, all diskette copies must be properly labeled "CTDISP 1".

To copy the OS/2 Display Driver Diskette, follow these instructions:

*Step 1:* Copy all files on the OS/2 Display Driver Diskette as you normally would onto another diskette.

*Step 2:* Place the diskette copy in drive A. At the C:\ prompt, type LABEL A: CTDISP 1 to properly label your diskette.

NOTE: *If you encounter problems when loading Full Screen OS/2 or WIN-OS/2, check if you are using lmouse.drv driver in the WINDOWS/SYSTEM subdirectory. If so, then you must edit the CHIPS550.DSP file and modify the following line:*

***BOOT OS2MOUSE.DRV  
MOUSE.DRV  
to  
BOOT OS2MOUSE.DRV  
LMOUSE.DRV***

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## **Chapter 7**

### **Ethernet**

#### **7.1 Introduction**

The SBC8157 Series is equipped with a high performance Plug and Play Ethernet interface that consists of a RJ-45 connector (CN25).

#### **7.2 Features**

- 10MB/s and 100MB/s operations
- Supports 10MB/s and 100MB/s N-Way auto negotiation
- Supports Wake On LAN
- Full duplex capability
- Full compliance with PCI Revision 2.1
- PCI Bus Master data transfers

#### **7.3 Drivers Supported**

Bundled with popular software drivers, the SBC8157 Series Ethernet interface allows great flexibility to work with all major networking operating systems including Novell NetWare x3.x/v4.x, Microsoft LAN Manager, Windows 3.1/95/98/NT3.51/NT4.0, IBM LAN Server, or other ODI and NDIS driver

#### **7.4 Other Information**

Please refer to the Ethernet Disk's Info directory for more information.

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## Appendix A

### Watchdog Timer

#### Using the Watchdog Function

The SBC8157 Series CPU card uses version 2.0 of the watchdog timer. This onboard WDT generates either a system reset or non-maskable interrupt (NMI), depending on the settings made on jumper **JP9** of SBC8157 Series. Follow the steps below to enable and program the watchdog function of SBC8157 Series.

Start

↓

Un-Lock WDT : OUT 120H 0AH ; enter WDT function  
OUT 120H 0BH ; enable WDT function

↓

Set multiple (1-4) : OUT 120 0NH ; N=1,2,3 or 4

↓

Set base timer (0-F) : OUT 121 0MH ; M=0,1,2,...F

↓

WDT counting

↓

re-set timer : OUT 121 0MH ; M=0,1,2,...F

↓

IF No re-set timer : WDT time-out, generate RESET or NMI

↓

IF to disable WDT : OUT 120 00H ; Can be disable at any time

| M | N         |          |           |            |
|---|-----------|----------|-----------|------------|
|   | 1         | 2        | 3         | 4          |
| 0 | 0.5 sec.  | 5 secs.  | 50 secs.  | 100 secs.  |
| 1 | 1 sec.    | 10 secs. | 100 secs. | 200 secs.  |
| 2 | 1.5 secs. | 15 secs. | 150 secs. | 300 secs.  |
| 3 | 2 secs.   | 20 secs. | 200 secs. | 400 secs.  |
| 4 | 2.5 secs. | 25 secs. | 250 secs. | 500 secs.  |
| 5 | 3 secs.   | 30 secs. | 300 secs. | 600 secs.  |
| 6 | 3.5 secs. | 35 secs. | 350 secs. | 700 secs.  |
| 7 | 4 secs.   | 40 secs. | 400 secs. | 800 secs.  |
| 8 | 4.5 secs. | 45 secs. | 450 secs. | 900 secs.  |
| 9 | 5 secs.   | 50 secs. | 500 secs. | 1000 secs. |
| A | 5.5 secs. | 55 secs. | 550 secs. | 1100 secs. |
| B | 6 secs.   | 60 secs. | 600 secs. | 1200 secs. |
| C | 6.5 secs. | 65 secs. | 650 secs. | 1300 secs. |
| D | 7 secs.   | 70 secs. | 700 secs. | 1400 secs. |
| E | 7.5 secs. | 75 secs. | 750 secs. | 1500 secs. |
| F | 8 secs.   | 80 secs. | 800 secs. | 1600 secs. |

## Appendix B

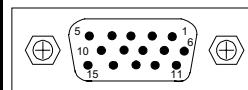
### Connector Pin Assignments

#### 40-pin IDE Interface Connector: CN1 and CN2

| Pin | Description | Pin | Description | Pin | Description  |
|-----|-------------|-----|-------------|-----|--------------|
| 1   | Reset #     | 2   | GND         | 3   | Data 7       |
| 4   | Data 8      | 5   | Data 6      | 6   | Data 9       |
| 7   | Data 5      | 8   | Data 10     | 9   | Data 4       |
| 10  | Data 11     | 11  | Data 3      | 12  | Data 12      |
| 13  | Data 2      | 14  | Data 13     | 15  | Data 1       |
| 16  | Data 14     | 17  | Data 0      | 18  | Data 16      |
| 19  | GND         | 20  | N/C         | 21  | N/C          |
| 22  | GND         | 23  | IOW #       | 24  | GND          |
| 25  | IOR #       | 26  | GND         | 27  | IOCHRDY      |
| 28  | N/C         | 29  | N/C         | 30  | GND-Default  |
| 31  | Interrupt   | 32  | N/C         | 33  | SA1          |
| 34  | N/C         | 35  | SA0         | 36  | SA2          |
| 37  | HDC CS0 #   | 38  | HDC CSI #   | 39  | HDD Active # |
| 40  | GND         |     |             |     |              |

#### CRT/VGA Connector: CN18

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|
| 1   | Red    | 2   | Green  | 3   | Blue   |
| 4   | N/C    | 5   | GND    | 6   | GND    |
| 7   | GND    | 8   | GND    | 9   | N/C    |
| 10  | GND    | 11  | N/C    | 12  | N/C    |
| 13  | Hsync  | 14  | Vsync  | 15  | N/C    |



Standard 15-pin pin header connector for CRT VGA display

### Floppy Disk Connector: CN3

| Pin | Description     | Pin | Description          | Pin | Description     |
|-----|-----------------|-----|----------------------|-----|-----------------|
| 1   | GND             | 2   | Reduce write current | 3   | GND             |
| 4   | N/C             | 5   | GND                  | 6   | N/C             |
| 7   | GND             | 8   | Index#               | 9   | GND             |
| 10  | Motor enable A# | 11  | GND                  | 12  | Drive select B# |
| 13  | GND             | 14  | Drive 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  | Side 1 select#       | 33  | GND             |
| 34  | Disk change#    |     |                      |     |                 |

### Parallel Port Connector: CN5

| Pin | Description    | Pin | Description        |
|-----|----------------|-----|--------------------|
| 1   | Strobe#        | 14  | Auto Form Feed#    |
| 2   | Data 0         | 15  | Error#             |
| 3   | Data 1         | 16  | Initialize#        |
| 4   | Data 2         | 17  | Printer Select In# |
| 5   | Data 3         | 18  | GND                |
| 6   | Data 4         | 19  | GND                |
| 7   | Data 5         | 20  | GND                |
| 8   | Data 6         | 21  | GND                |
| 9   | Data 7         | 22  | GND                |
| 10  | Acknowledge#   | 23  | GND                |
| 11  | Busy           | 24  | GND                |
| 12  | Paper Empty#   | 25  | GND                |
| 13  | Printer Select | 26  |                    |

**RS-232 pin assignments for COM1: CN14**

| Pin | Description               | Pin | Description           |
|-----|---------------------------|-----|-----------------------|
| 1   | Data Carrier Detect (DCD) | 6   | Data Set Ready (DSR)  |
| 2   | Receive Data (RXD)        | 7   | Request to Send (RTS) |
| 3   | Transmit Data (DRT)       | 8   | Clear to Send (CTS)   |
| 4   | Data Terminal Ready (DTR) | 9   | Ring Indicator (RI)   |
| 5   | Ground (GND)              |     |                       |

**RS-232 pin assignments for COM1 and  
RS-232/422/485 pin assignments for COM2: CN8**

| Pin # | Signal Name |              |              |
|-------|-------------|--------------|--------------|
|       | RS-232      | R2-422       | RS-485       |
| 1     | DCD         | TX-          | DATA-        |
| 2     | DSR         | No connector | No connector |
| 3     | RX          | TX+          | DATA+        |
| 4     | RTS         | No connector | No connector |
| 5     | TX          | RX+          | No connector |
| 6     | CTS         | No connector | No connector |
| 7     | DTR         | RX-          | No connector |
| 8     | RI          | No connector | No connector |
| 9,10  | GND         | GND          | GND          |

**External Keyboard Connector: CN20**

| Pin # | Signal Name    |
|-------|----------------|
| 1     | Keyboard clock |
| 2     | Keyboard data  |
| 3     | PG             |
| 4     | GND            |
| 5     | Keyboard Vcc   |



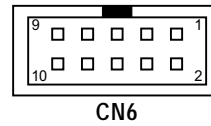
**External PS/2 Mouse Connector: CN21**

| Pin # | Signal Name |
|-------|-------------|
| 1     | Mouse clock |
| 2     | Mouse data  |
| 3     | PG          |
| 4     | GND         |
| 5     | Mouse Vcc   |



**USB Connector: CN6**

| Pin # | Signal  | Pin # | Signal  |
|-------|---------|-------|---------|
| 1     | USB Vcc | 2     | USB Vcc |
| 3     | USB P0- | 4     | USB P1- |
| 5     | USB P0+ | 6     | USB P1+ |
| 7     | GND     | 8     | GND     |
| 9     | NC      | 10    | NC      |



**General Output Connector: CN10**

- Reset Switch: Pins 17 & 18
- HDD Active LED: Pins 19 & 20
- Speaker: Pins 2, 4, 6, & 8
- SMI Switch: Pins 11 & 12
- KeyLock/Power LED: Pins 1, 3, 5, 7 & 9

| Pin | Description | Pin | Description  |
|-----|-------------|-----|--------------|
| 1   | Vcc         | 2   | Ext. Speaker |
| 3   | N.C.        | 4   | Int. Buzzer  |
| 5   | GND         | 6   | GND          |
| 7   | Keylock     | 8   | Vcc          |
| 9   | GND         | 10  | N.C.         |
| 11  | GND         | 12  | SMI          |
| 13  | N.C.        | 14  | N.C.         |
| 15  | Reserved    | 16  | Reserved     |
| 17  | GND         | 18  | RESET        |
| 19  | HD_LED      | 20  | Vcc          |

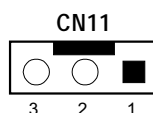
### IrDA Connector: CN12

| Pin | Signal | Pin | Signal   |
|-----|--------|-----|----------|
| 1   | Vcc    | 2   | N.C.     |
| 3   | N.C.   | 4   | Reserved |
| 5   | RX     | 6   | Reserved |
| 7   | GND    | 8   | N.C.     |
| 9   | Tx     | 10  | N.C.     |

You must also configure the setting on the “UART Mode Select” from the Integrated Peripherals menu your BIOS utility program to select whether UART2 is directed for use with COM2, IrDA, or other IrDA-compliant serial infrared port. Use the five pins of **CN12** and connect a ribbon cable from the module to the motherboard according to the pin definitions.

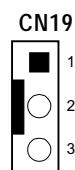
### Fan Connector 1: CN11

| Pin | Description  |
|-----|--------------|
| 1   | GND          |
| 2   | +12V         |
| 3   | Speed Sensor |



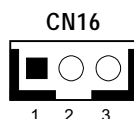
### Fan Connector 2: CN19

| Pin | Description  |
|-----|--------------|
| 1   | GND          |
| 2   | +12V         |
| 3   | Speed Sensor |



### External LAN Card WAKE ON LAN Connector: CN16

| Pin | Description |
|-----|-------------|
| 1   | 5VSB        |
| 2   | GND         |
| 3   | WOL         |



**PICMG Slot Connector**

| Signal   | Pin | Pin | Signal  |
|----------|-----|-----|---------|
| GND      | B01 | A01 | IOCHK#  |
| RESETDRV | B02 | A02 | SD7     |
| +5V      | B03 | A03 | SD6     |
| IRQ9     | B04 | A04 | SD5     |
| -5V      | B05 | A05 | SD4     |
| DRQ2     | B06 | A06 | SD3     |
| -12V     | B07 | A07 | SD2     |
| ENDXFR#  | B08 | A08 | SD1     |
| +12V     | B09 | A09 | SD0     |
| SMEMW#   | B11 | A11 | AEN     |
| SMEMR#   | B12 | A12 | SA19    |
| GND      | B10 | A10 | IOCHRDY |
| IOW#     | B13 | A13 | SA18    |
| IOR#     | B14 | A14 | SA17    |
| DACK3#   | B15 | A15 | SA16    |
| DRQ3     | B16 | A16 | SA15    |
| DACK1#   | B17 | A17 | SA14    |
| DRQ1     | B18 | A18 | SA13    |
| REFRSH#  | B19 | A19 | SA12    |
| SYSCLK   | B20 | A20 | SA11    |
| IRQ7     | B21 | A21 | SA10    |
| IRQ6     | B22 | A22 | SA9     |
| IRQ5     | B23 | A23 | SA8     |
| IRQ4     | B24 | A24 | SA7     |
| IRQ3     | B25 | A25 | SA6     |
| DACK2#   | B26 | A26 | SA5     |
| TC       | B27 | A27 | SA4     |
| BALE     | B28 | A28 | SA3     |
| +5V      | B29 | A29 | SA2     |
| OSC      | B30 | A30 | SA1     |

Continued . . . . .

| Signal | Pin | Pin | Signal |
|--------|-----|-----|--------|
|--------|-----|-----|--------|



|               |     |     |           |
|---------------|-----|-----|-----------|
| GND           | B31 | A31 | SA0       |
| Connector Key |     |     |           |
| Connector Key |     |     |           |
| Connector Key |     |     |           |
| MEMCS16#      | D01 | C01 | SBHE#     |
| IOCS16#       | D02 | C02 | LA23      |
| IRQ10         | D03 | C03 | LA22      |
| IRQ11         | D04 | C04 | LA21      |
| IRQ12         | D05 | C05 | LA20      |
| IRQ15         | D06 | C06 | LA19      |
| IRQ14         | D07 | C07 | LA18      |
| DACK0#        | D08 | C08 | LA17      |
| DRQ0          | D09 | C09 | MEMR#     |
| DACK5#        | D10 | C10 | MEMW#     |
| DRQ5          | D11 | C11 | SD8       |
| DACK6#        | D12 | C12 | SD9       |
| DRQ6          | D13 | C13 | SD10      |
| DACK7#        | D14 | C14 | SD11      |
| DRQ7          | D15 | C15 | SD12      |
| +5V           | D16 | C16 | SD13      |
| MASTER#       | D17 | C17 | SD14      |
| GND           | D18 | C18 | SD15      |
| -12V          | F01 | E01 | TRST#     |
| TCK           | F02 | E02 | +12V      |
| GND           | F03 | E03 | TMS       |
| TDO           | F04 | E04 | TDI       |
| +5V           | F05 | E05 | +5V       |
| +5V           | F06 | E06 | INTA#     |
| INTB#         | F07 | E07 | INTC#     |
| INTD#         | F08 | E08 | +5v       |
| REQ3#         | F09 | E09 | CLKC      |
| REQ1#         | F10 | E10 | +5V (I/O) |

Continued . . . . .

|        |     |     |        |
|--------|-----|-----|--------|
| Signal | Pin | Pin | Signal |
|--------|-----|-----|--------|

|           |     |     |           |
|-----------|-----|-----|-----------|
| GNT3#     | F11 | E11 | CLKD      |
| GND       | F12 | E12 | GND       |
| GND       | F13 | E13 | GND       |
| CLKA      | F14 | E14 | GNT1#     |
| GND       | F15 | E15 | RST#      |
| CLKB      | F16 | E16 | +5V (I/O) |
| GND       | F17 | E17 | GNT0#     |
| REQ0#     | F18 | E18 | GND       |
| +5V (I/O) | F19 | E19 | REQ2#     |
| AD31      | F20 | E20 | AD30      |
| AD29      | F21 | E21 | +3.3V     |
| GND       | F22 | E22 | AD28      |
| AD27      | F23 | E23 | SD26      |
| AD25      | F24 | E24 | GND       |
| +3.3V     | F25 | E25 | AD24      |
| C/BE3#    | F26 | E26 | GNT2#     |
| AD23      | F27 | E27 | +3.3V     |
| GND       | F28 | E28 | AD22      |
| AD21      | F29 | E29 | AD20      |
| AD19      | F30 | E30 | GND       |
| +3.3V     | F31 | E31 | AD18      |
| AD17      | F32 | E32 | AD16      |
| C/BE2#    | F33 | E33 | +3.3V     |
| GND       | F34 | E34 | FRAME#    |
| IRDY#     | F35 | E35 | GND       |
| +3.3V     | F36 | E36 | TRDY#     |
| DEVSEL#   | F37 | E37 | GND       |
| GND       | F38 | E38 | STOP#     |
| LOCK#     | F39 | E39 | +3.3V     |
| PERR#     | F40 | E40 | SDONE     |
| +3.3V     | F41 | E41 | SB0#      |
| SERR#     | F42 | E42 | GND       |

Continued . . . . .

|        |     |     |        |
|--------|-----|-----|--------|
| Signal | Pin | Pin | Signal |
|--------|-----|-----|--------|

|               |     |     |           |
|---------------|-----|-----|-----------|
| +3.3V         | F43 | E43 | PAR       |
| C/BE1#        | F44 | E44 | AD15      |
| AD14          | F45 | E45 | +3.3V     |
| GND           | F46 | E46 | AD13      |
| AD12          | F47 | E47 | AD11      |
| AD10          | F48 | E48 | GND       |
| GND           | F49 | E49 | AD09      |
| Connector Key |     |     |           |
| Connector Key |     |     |           |
| AD08          | F52 | E52 | C/BE0#    |
| AD07          | F53 | E53 | +3.3V     |
| +3.3V         | F54 | E54 | AD06      |
| AD05          | F55 | E55 | AD04      |
| AD03          | F56 | E56 | GND       |
| GND           | F57 | E57 | AD02      |
| AD01          | F58 | E58 | AD00      |
| +5V (I/O)     | F59 | E59 | +5V (I/O) |
| ACK64#        | F60 | E60 | REQ64#    |
| +5V           | F61 | E61 | +5V       |
| +5V           | F62 | E62 | +5V       |
| Connector Key |     |     |           |
| Connector Key |     |     |           |

**This page does not contain any information.**

## Appendix C

### Award BIOS Reference

#### POST Messages

During the Power On Self Test (POST), the BIOS automatically detects for errors and will either display a message on the screen requiring you to fix such problem or produce a beep code. Once a message is displayed, the following line will succeed it:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

#### POST Beep

Currently there is only one beep code in the Award BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.

#### Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

|                         |   |
|-------------------------|---|
| CMOS BATTERY HAS FAILED | CMOS battery is no longer functional. It should be replaced.  |
| CMOS CHECKSUM ERROR     | Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. A weak battery may have caused this error. Check the battery and replace if necessary. |

Continued . . . . .

|  |   |
|--|---|
| DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER                      | No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system. |
| DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP                        | Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.  |
| DISPLAY SWITCH IS SET INCORRECTLY  | Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.  |
| DISPLAY TYPE HAS CHANGED SINCE LAST BOOT                                   | Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.   |
| EISA Configuration Checksum Error<br>PLEASE RUN EISA CONFIGURATION UTILITY | The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.  |

Continued . . . . .

|   |  |
|---|--|
| EISA Configuration Is Not Complete<br>PLEASE RUN EISA CONFIGURATION UTILITY | The slot configuration information stored in the EISA non-volatile memory is incomplete.<br>NOTE: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.  |
| ERROR ENCOUNTERED<br>INITIALIZING HARD DRIVE                                | Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.  |
| ERROR INITIALIZING HARD DISK CONTROLLER                                     | Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.  |
| FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT                               | Cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.  |
| Invalid EISA Configuration<br>PLEASE RUN EISA CONFIGURATION UTILITY         | The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.<br>NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility. |

Continued . . . . .

|   |   |
|---|---|
| KEYBOARD ERROR OR NO KEYBOARD PRESENT   | Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.<br><br>If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot. |
| Memory Address Error at ...             | Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.  |
| Memory Parity Error at ...              | Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.   |
| MEMORY SIZE HAS CHANGED SINCE LAST BOOT | Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.   |
| Memory Verify Error at ...              | Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.  |
| OFFENDING ADDRESS NOT FOUND             | This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.   |

Continued . . . . .



|   |   |
|---|---|
| OFFENDING SEGMENT:  | This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.  |
| PRESS A KEY TO REBOOT   | This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.   |
| PRESS F1 TO DISABLE NMI, F2 TO REBOOT   | When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.   |
| RAM PARITY ERROR - CHECKING FOR SEGMENT ...                                   | Indicates a parity error in Random Access Memory.   |
| Should Be Empty But EISA Board Found<br>PLEASE RUN EISA CONFIGURATION UTILITY | A valid board ID was found in a slot that was configured as having no board ID.<br>NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.                               |
| Should Have EISA Board But Not Found<br>PLEASE RUN EISA CONFIGURATION UTILITY | The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.<br>NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility. |
| Slot Not Empty  | Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.<br>NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.        |

Continued . . . . .

- SYSTEM HALTED, (CTRL-ALT-DEL)  
TO REBOOT ... Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.
- Wrong Board In Slot  
PLEASE RUN EISA  
CONFIGURATION UTILITY The board ID does not match the ID stored in the EISA non-volatile memory.  
NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

## POST Codes

NOTE: *EISA POST codes are typically output to port address 300h. ISA POST codes are output to port address 80h.*

| POST (hex) | Description   |
|------------|---|
| C0         | <ol style="list-style-type: none"> <li>1. Turn off OEM specific cache, shadow...</li> <li>2. Initialize all the standard devices with default values<br/>standard devices includes:<br/>-DMA controller (8237)<br/>-Programmable Interrupt Controller (8259)<br/>-Programmable Interval Timer (8254)<br/>-RTC chip</li> </ol> |
| C1         | Auto-detection of onboard DRAM & Cache  |
| C3         | <ol style="list-style-type: none"> <li>1. Test system BIOS checksum</li> <li>2. Test the first 256K DRAM</li> <li>3. Expand the compressed codes into temporary DRAM area including the compressed System BIOS &amp; Option ROMs</li> </ol>   |
| C5         | Copy the BIOS from ROM into E0000-FFFF shadow RAM so that POST will go faster   |
| 01-02      | Reserved  |
| 03         | Initialize EISA registers (EISA BIOS only)  |
| 04         | Reserved  |

Continued . . . . .

| POST (hex) | Description   |
|------------|---|
| 05         | 1. Keyboard Controller Self-Test<br>2. Enable Keyboard Interface  |
| 06         | Reserved  |
| 07         | Verifies the basic R/W functionality of CMOS  |
| BE         | Program defaults values into chipset according to the MODBINable Chipset Default Table  |
| 09         | 1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table<br>2. OEM specific cache initialization (if needed)   |
| 0A         | 1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers<br>2. Initialize INT no from 33-120 with Dummy(Spurious) Interrupt Handler<br>3. Issue CPUID instruction to identify CPU type<br>4. Early Power Management initialization (OEM specific) |

● **This POST code is for boot block**

| POST (hex) | Description  |
|------------|--|
| C0         | 1. Turn off OEM specific cache, shadow.<br>2. Initialize all the standard devices with default values<br>standard devices includes:<br>-DMA controller (8237)<br>-Programmable Interrupt Controller (8259)<br>-Programmable Interval Timer (8254)<br>-RTC chip |
| C1         | Auto-detection of onboard DRAM & Cache   |
| C3         | Checking checksum of compressed code   |
| C5         | Copy the BIOS from ROM into E0000-FFFFFF shadow RAM so that POST will go faster  |
| 01         | Clear base memory 0~640K   |
| 0C         | Initial interrupt vector 00-1FH  |
| 0D         | Initial ISA VGA  |
| 41H        | Enable FDD and detect media type   |
| FFH        | Boot from FDD  |

- This page is for Non-Compressed Version only.

| POST (hex) | Description   |
|------------|---|
| 01-02      | Reserved  |
| C0         | Turn off OEM specific cache, shadow...  |
| 03         | <ol style="list-style-type: none"> <li>1. Initialize EISA registers (EISA BIOS only)</li> <li>2. Initialize all the standard devices with default values<br/>Standard devices includes:<br/>-DMA controller (8237)<br/>-Programmable Interrupt Controller (8259)<br/>-Programmable Interval Timer (8254)<br/>-RTC chip</li> </ol>   |
| 04         | Reserved  |
| 05         | <ol style="list-style-type: none"> <li>1. Keyboard Controller Self-Test</li> <li>2. Enable Keyboard Interface</li> </ol>  |
| 06         | Reserved  |
| 07         | Verifies the basic R/W functionality of CMOS  |
| BE         | Program defaults values into chipset according to the MODBINable Chipset Default Table  |
| C1         | Auto-detection of onboard DRAM & Cache  |
| C5         | Copy the BIOS from ROM into E0000-FFFFFF shadow RAM so that POST will go faster   |
| 08         | Test the first 256K DRAM  |
| 09         | <ol style="list-style-type: none"> <li>1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table</li> <li>2. OEM specific cache initialization (if needed)</li> </ol>   |
| 0A         | <ol style="list-style-type: none"> <li>1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with Dummy(Spurious) Interrupt Handler</li> <li>2. Issue CPUID instruction to identify CPU type</li> <li>3. Early Power Management initialization (OEM specific)</li> </ol> |

- The following POST Codes are for all of Compress Version & Non-Compress Version

| POST (hex) | Description  |
|------------|--|
| 0B         | <ol style="list-style-type: none"> <li>1. Verify if the RTC time is valid or not</li> <li>2. Detect bad battery</li> <li>3. Read CMOS data into BIOS stack area</li> <li>4. PnP initializations including (PnP BIOS only) <ul style="list-style-type: none"> <li>-Assign CSN to PnP ISA card</li> <li>-Create resource map from ESCD</li> </ul> </li> <li>5. Assign IO &amp; Memory for PCI devices (PCI BIOS only)</li> </ol>   |
| 0C         | Initialization of the BIOS Data Area (40 : 00 – 40:FF)   |
| 0D         | <ol style="list-style-type: none"> <li>1. Program some of the Chipset's value according to Setup. (Early Setup Value Program)</li> <li>2. Measure CPU speed for display &amp; decide the system clock speed</li> <li>3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep which consists of one single long beep followed by two short beeps.</li> </ol>  |
| 0E         | <ol style="list-style-type: none"> <li>1. Initialize the APIC (Multi-Processor BIOS only)</li> <li>2. Test video RAM (If Monochrome display device found)</li> <li>3. Show messages including: <ul style="list-style-type: none"> <li>- Award Logo, Copyright string, BIOS Date code &amp; Part No.</li> <li>- OEM specific sign on messages</li> <li>- Energy Star Logo (Green BIOS ONLY)</li> <li>- CPU brand, type &amp; speed</li> <li>- Test system BIOS checksum(Non-Compress Version only)</li> </ul> </li> </ol> |
| 0F         | DMA channel 0 test   |
| 10         | DMA channel 1 test   |
| 11         | DMA page registers test  |
| 12-13      | Reserved   |
| 14         | Test 8254 Timer 0 Counter 2.   |
| 15         | Test 8259 interrupt mask bits for channel 1  |
| 16         | Test 8259 interrupt mask bits for channel 2  |
| 17         | Reserved   |

Continued . . . . .

| POST (hex) | Description  |
|------------|--|
| 19         | Test 8259 functionality  |
| 1A-1D      | Reserved   |
| 1E         | If EISA NVM checksum is good, execute EISA initialization (EISA BIOS only)   |
| 1F-29      | Reserved   |
| 30         | Detect Base Memory & Extended Memory Size  |
| 31         | 1. Test Base Memory from 256K to 640K<br>2. Test Extended Memory from 1M to the top of memory  |
| 32         | 1. Display the Award Plug & Play BIOS Extension message (PnP BIOS only)<br>2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port... according to setup value                |
| 33-3B      | Reserved   |
| 3C         | Set flag to allow users to enter CMOS Setup Utility  |
| 3D         | 1. Initialize Keyboard<br>2. Install PS2 mouse   |
| 3E         | Try to turn on Level 2 cache<br>NOTE: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h   |
| 3E         | Try to turn on Level 2 cache<br>NOTE: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h   |
| BF         | 1. Program the rest of the Chipset's value according to Setup. (Later Setup Value Program)<br>2. If auto-configuration is enabled, programmed the chipset with pre-defined values in the MODBINable Auto-Table |
| 41         | Initialize floppy disk drive controller  |
| 42         | Initialize Hard drive controller   |
| 43         | If it is a PnP BIOS, initialize serial & parallel ports  |
| 44         | Reserved   |
| 45         | Initialize math coprocessor.   |

Continued . . . . .

| POST (hex) | Description  |
|------------|--|
| 46-4D      | Reserved   |
| 4E         | If there is any error detected (such as video, kb...), show all the error messages on the screen & wait for user to press <F1> key   |
| 4F         | <ol style="list-style-type: none"> <li>1. If password is needed, ask for password</li> <li>2. Clear the Energy Star Logo (Green BIOS only)</li> </ol>  |
| 50         | Write all CMOS values currently in the BIOS stack area back into the CMOS  |
| 51         | Reserved   |
| 52         | <ol style="list-style-type: none"> <li>1. Initialize all ISA ROMs</li> <li>2. Later PCI initializations (PCI BIOS only)                             <ul style="list-style-type: none"> <li>-assign IRQ to PCI devices</li> <li>-initialize all PCI ROMs</li> </ul> </li> <li>3. PnP Initializations (PnP BIOS only)                             <ul style="list-style-type: none"> <li>-assign IO, Memory, IRQ &amp; DMA to PnP ISA devices</li> <li>-initialize all PnP ISA ROMs</li> </ul> </li> <li>4. Program shadows RAM according to Setup settings</li> <li>5. Program parity according to Setup setting</li> <li>6. Power Management Initialization                             <ul style="list-style-type: none"> <li>-Enable/Disable global PM</li> <li>-APM interface initialization</li> </ul> </li> </ol> |
| 53         | <ol style="list-style-type: none"> <li>1. If it is NOT a PnP BIOS, initialize serial &amp; parallel ports</li> <li>2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value</li> </ol>   |
| 60         | Setup Virus Protection (Boot Sector Protection) functionality according to Setup setting   |

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