# User's Manual

# ECB-662

**Intel® Pentium® III / Celeron® ISA-bus Half-size CPU Card with LCD & Single 10/100Base-Tx Ethernet**

1st Ed. – 31 July 2003

Part No. 2047662000

# FCC STATEMENT

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE

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**Headquarters**
**Evalue Technology Inc.**
5F~7, No.130, Chien Kang Road,
Chung Ho City, Taipei,
Taiwan
Tel : +886-2-2228-6111
Fax : +886-2-2228-6667
http://www.evalue-tech.com
E-mail: service@evalue-tech.com

**Europe Branch Office**
**Evalue Europe A/S**
Nordre Strandvej 119C,
3150 Hellebaek,
Denmark
Tel : +45-7025-0310
Fax : +45-4975-5026
http://www.evalue-tech.com
E-mail: service.europe@evalue-tech.com

**China Branch Office**
**Evalue Technology Shanghai Inc.**
Room 909, 9F, Section B, No.900,
Yisan Road, Caohejing Hi-tech Park,
Shanghai 200233, China
Tel : +86-21-5423-4170
Fax : +86-21-5423-4171
http://www.evalue-tech.com
E-mail: service.china@evalue-tech.com

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1. Collect all the information about the problem encountered. (For example, CPU type and speed, Evalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.

2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.

4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

## Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 ECB-662 Intel® Pentium® III / Celeron® ISA-bus Half-size CPU Card
- 1 Quick Installation Guide
- 1 CD-ROM contains the followings:
  - User's Manual (this manual in PDF file)
  - Ethernet driver and utilities
  - VGA drivers and utilities
  - Latest BIOS (as of the CD-ROM was made)
- Cable set includes the followings:
  - 1 ATA-33 IDE cable (40-pin, pitch 2.54mm)
  - 1 FDD cable (34-pin, pitch 2.54mm)
  - 1 Bracket with one Serial and one Printer cable (10-pin 2.54mm / 26-pin 2.54mm)
  - 1 PS/2 keyboard and mouse Y cable (6-pin, Mini-DIN)
  - 1 keyboard adapter cable (5-pin to 5-pin)

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

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## Document Amendment History

| Revision | Date | By | Comment |
|---|---|---|---|
| 1st | July '31. | Casey Hsu | Initial Release |

# 1. Manual Objectives

This manual describes in detail the Evalue Technology ECB-662 Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to interface with ECB-662 or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

# 2. Introduction

## 2.1 System Overview

The ECB-662 is a Half-size Intel® Celeron™ Processor in 370-pin Socket grade PCI/ISA single board computer that is using the Intel 440 BX chipset, that supports the Ultra DMA-33 for faster hard drive and the health monitoring hardware. The health monitoring hardware detects and releases a sound alarm for any abnormal function of the operating voltage & temperature of CPU or it's cooling fan. For boosting operation, this motivated card also supports one socket for a Flash Disk, two DIM modules.

Take note that the ECB-662 is a high power & full engine SBC with display of resolution up to 1024x768 at 256 colors (for 2MB VRAM). It is a board that has so much for a deluxe cost. It is all you got in this full engine SBC with so many features. No hassle of going through the extra effort and cost of additional I/O cards.

The ECB-662 is built as a ISA expansion card that is simply upgraded by changing one card from another without replacing the whole system. It provides the primarily elements for building an IBM PC/AT compatible computer for a wide variety of applications with system integration. The ECB-662 is fully compatible with the IBM PC/AT which means virtually all the software written for the IBM PC/AT will run on the ECB-662 SBC.

Other on-board features include two serial ports (RS-232 and RS-232/422/485), one multi-mode parallel (ECP/EPP/SPP) port, a floppy drive controller, a PS/2 keyboard and mouse interface. The built-in high speed PCI IDE controller supports both PIO and bus master modes. Up to two IDE devices can be connected, including large hard disks, CD-ROM drives, tape backup drives and other IDE devices. Its 6-layer printed circuit board combines with noise-tolerant and low power consumption CMOS technology applied on the board makes ECB-662 able to withstand any harsh industrial environments very well.

## 2.2 System Specifications

### *System*

- **Bus Interface:** ISA bus
- **CPU:** Supports Intel® Pentium® III / Celeron® (CopperMine only) & VIA C3
- **FSB:** 66/100 MHz
- **BIOS:** Award 256 KB Flash BIOS
- **System Chipset:** Intel® 82443BX/82371AB
- **I/O Chip:** Winbond W83977EF-AW
- **System Memory:** Two 168-pin DIMM sockets support up to 512 MB SDRAM
- **SSD:** One M-Systems DiskOnChip socket
- **Watchdog Timer:** Reset; 0~31 sec., 2 sec./step
- **H/W Status Monitor:** Monitoring temperatures, voltages, and cooling fan status. Auto throttling control when CPU overheats
- **MIO:** 2 x EIDE (Ultra DMA 33), 2 x FDD, 1 x LPT, 1 x RS-232, 1 x RS-232/422/485, 1x K/B & Mouse
- **IrDA:** 115k bps, IrDA 1.0 compliant
- **USB:** 2 x USB 1.0 ports

### *Display*

- **Chipset:** Asiliant (C&T) 69000 2D graphic engine
- **Display Memory:** 2 MB frame buffer
- **Resolution:** CRT mode: 1280 x 1024 @ 8 bpp (60 Hz)
  LCD/Simultaneous mode: 1024 x 768 @ 16 bpp (85 Hz)
- **VGA/LCD Interface:** AGP 1X VGA/LCD interface
  Supports 9/12/18/24/36-bit TFT and 16/24-bit color DSTN panels

### *Ethernet*

- **Chipset:** Realtek RTL8139C
- **Ethernet Interface:** IEEE 802.3u 100Base-Tx Fast Ethernet compatible
- **Remote Boot ROM:** Optional built-in boot ROM in Flash BIOS

## *Mechanical & Environmental*

- **Power Requirement:** +5 V @ 5.03 A, +12 V @ 330 mA, -12 V @ 10 mA (with Celeron® 400 MHz & 64 MB SDRAM)
- **Power Type:** AT/ATX
- **Operating Temperature:** 0~60° C (32~140° F)
- **Operating Humidity:** 0%~90% relative humidity, non-condensing
- **Operating Humidity:** 7.3" x 4.8" (185 mm x 122 mm)
- **Weight:** 0.63 lbs (0.3 Kg)

## 2.3 Architecture Overview

The following block diagram shows the architecture and main components of ECB-662 series.

The following sections provide detail information about the functions provided onboard.

# 3. Hardware Configuration

## 3.1 Installation Procedure

Step 1. Turn off the power supply.

Step 2. Check all jumpers setting on proper position

Step 3. Install and configure CPU and memory module on right position

Step 4. Insert all external cables for hard disk, floppy, keyboard, mouse etc. except for flat panel. A CRT monitor must be connected in order to change CMOS settings to support flat panel.

Step 5. Plug the board into the dedicated position of the Backplane.

Step 6. Connect power supply via the Backplane.

Step 7. Turn on the power.

Step 8. Enter the BIOS setup by pressing the delete key during boot up. Use the "Auto Configuration with Optimal Settings" feature. The ***Peripheral Setup*** and the ***Standard CMOS Setup*** Window must be entered and configured correctly to match the particular system configuration.

Step 9. If TFT panel display is to be utilised, make sure the panel voltage is correctly set before connecting the display cable and turning on the power.

## 3.2 Safety Precautions

### 3.2.1 Warning!

Always completely disconnect the power cord from your chassis or power cable from your board whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

### 3.2.2 Caution!

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

## 3.3 JUMPER SETTING AND CONNECTORS

The figure below shows the jumpers and connectors location on the ECB-662

### 3.3.1 Board Outline of ECB-662

### 3.3.2 Installing and Upgrading the CPU

To upgrade to a higher power CPU, simply remove the old CPU and install to a new one; be sure to set the jumpers for the new CPU type and speed.

***WARNING!***

Disconnect the power cord from your system when you intend to work on it or you plan to open the chassis of your IPC. Do not make connections when the power is turned on because the sensitive electronic components could been damaged by the sudden rush of power. Please only allow experienced electronic technicians to do this job.

***STATIC ELECTRICITY PRECAUTION!***

Caution! Computer components are very sensitive to damage from static electric discharge. Always ground yourself to remove static charge build-up before touching the boards in the computer. Use a grounding wrist strap at all time. Place all electronic components on the anti-static pad for static-dissipation or in a static-shielded bag when they are not in the chassis.

***CAUTION!***

Danger of Explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

### 3.3.3 Installing the DIMM Module:

A DIMM module simply snaps into a socket on the system board. Pin1 of the DIMM module must correspond with Pin1 of the socket.

1. Pull the “tabs” which are at the ends of the socket to the side.
2. Position the DIMM above the socket with the “notches” in the module aligned with the “keys” on the socket.
3. Seat the module vertically into the socket. Make sure it is completely seated. The tabs will hold the DIMM in place.

### 3.3.4 Jumper Setting Overview

In order to select the operation modes of your system, configure and set the jumpers on the your CPU card to match the need of your application. To set a jumper, a black plastic cap containing metal contacts is placed over the jumper pins as designated by the required configuration as listed in this section. A jumper is said to be " on " or " 1-2 " when the black cap has been placed on two of its pins, as show in the figure below:

A pair of needle-nose pliers is recommended when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local sales representative before you make any changes. In general, you simply need a standard cable to make most connections.

### 3.3.5 Jumper Location for ECB-662

### 3.3.6 Jumper Settings Summary for ECB-662

| JUMPER | FUNCTION |
|---|---|
| JP1 | Select Internal CPU Clock Ratio |
| JP2 | Select Clear CMOS Data |
| JP4 | Select M-System Address |
| JP6 ~ JP7 | Select ISP GAL Function (Manufacturer Define) |
| JP8 ~ JP12 | Select COM2 Type |
| JP13 | Select Panel Type |
| JP14 | Select Panel Voltage |

**Note : Different jumpers are listed as following of version below V2.0**

| JUMPER | FUNCTION |
|---|---|
| JP3 | Select CPU External Bus Clock |

### 3.3.7 Jumper Settings for ECB-662

- **JP1 : Select Internal CPU Clock Ratio**

| Internal CPU Clock Ratio | JP1 |
|---|---|
| 1.5 | 3-4 |
| 2 | OFF |
| 2.5 | 1-2, 3-4, 7-8 |
| 3 | 1-2, 5-6 , 7-8 |
| 3.5 | 1-2, 7-8 |
| 4 | 3-4, 5-6, 7-8 |
| 4.5 | 3-4, 7-8 |
| 5(Default) | 5-6, 7-8 |
| 5.5 | 7-8 |
| 6 | 1-2, 3-4, 5-6 |
| 6.5 | 1-2, 3-4 |
| 7 | 1-2, 5-6 |
| 7.5 | 1-2 |
| 8 | 3-4, 5-6 |

- **JP2 : Select Clear CMOS Data (Power-On situation)**

| JP2 | Description |
|---|---|
| ON | Clear CMOS |
| OFF (Default) | Normal |

Clear CMOS

Normal

- **JP3 : Select CPU External Bus Clock (For version below 2.0)**

| JP3 | Description |
|---|---|
| 5-6, 7-8 | 66MHz ( Default ) |
| 7-8 | 100MHz |

- **JP4 : Select M-System (Flash Disk) Address**

| Address | JP4 |
|---|---|
| D0000H~D1FFFH | 3-4, 7-8 |
| D4000H~D5FFFH | 3-4, 9-10 |
| D8000H~D9FFFH | 5-6, 7-8 |
| DC000H~DDFFFH | 5-6, 9-10 |
| CC000H~C0FFFH | 1-2, 9-10 |
| Default | 2-4,6-8 |

Default

D0000~D1FFFH

D4000~D5FFFH

D8000~D9FFFH

DC000~DDFFFH

CC000~CDFFFH

- **JP6 / JP7 : Select ISP GAL Function (Manufacture Define)**

| | 3.3.7.1.1 JP6 | JP7 |
|---|---|---|
| **Program ISP GAL** | **2-3** | **2-3** |
| **Use Watch-Dog** | **1-2** | **1-2** |

Program ISP GAL

Default Use Watch-Dog

- **JP8 ~ JP12 : Select COM2 Type**

| COM2 Type | JP12 | JP8, JP9, JP10, JP11 |
|---|---|---|
| RS-232 (Default) | 1-2 | 1-2 |
| RS-422 | 3-4 | 2-3 |
| RS-485 | 5-6 | 2-3 |

RS-232(Default)

RS-422

RS-485

- **JP13 : Select Panel Type**

| | JP13 | Panel Type | | JP13 | Panel Type |
|---|---|---|---|---|---|
| 1. | 1-2,3-4,5-6,7-8 | 1024x768 Dual Scan STN Color Panel | 9. | 1-2,3-4,5-6 | 800x600 TFT Color Panel |
| 2. | 3-4,5-6,7-8 | 1280x1024 TFT Color Panel | 10. | 3-4,5-6 | 800x600 TFT Color Panel |
| 3. | 1-2,5-6,7-8 | 640x480 Dual Scan STN Color Panel | 11. | 1-2,5-6 | 800x600 Dual Scan STN Color Panel |
| 4. | 5-6,7-8 | 800x600 Dual Scan STN Color Panel | 12. | 5-6 | 800x600 Dual Scan STN Color Panel |
| 5. | 1-2,3-4,7-8 | 640x480 Sharp TFT Color Panel | 13. | 1-2,3-4 | 1024x768 TFT Color Panel |
| 6. | 3-4,7-8(Default) | 640x480 18bit TFT Color Panel | 14. | 3-4 | 1280x1024 Dual Scan STN Color Panel |
| 7. | 1-2,7-8 | 1024x768 TFT Color Panel | 15. | 1-2 | 1024x600 Dual Scan STN Color Panel |
| 8. | 7-8 | 800x600 TFT Color Panel | 16. | OFF | 1024x600 TFT Color Panel |

- **JP14:Select Panel Voltage**

| Panel Voltage | JP14 |
|---|---|
| 3.3V (Default) | 2-3 |
| 5V | 1-2 |

### 3.3.8 I/O Connector Location for ECB-662

### 3.3.9 I/O Connector Summary for AP-370LH/H

| CONNECTOR | FUNCTION |
|---|---|
| J1 | Power LED, Key Lock, Speaker, Reset, HDD LED |
| FAN1 / FAN2 | Fan Connector |
| COM1 | COM1 Connector (D-Sub Connector) |
| COM2 | COM2 Connector (Header) |
| USBC1 | USB Connector (Pins) |
| KCN1 | External Keyboard Connector (Header) |
| PKB1 | PS2 Keyboard & Mouse "Y" Connector (6-Pin Min-DIN) |
| LAN1 | RJ-45 Connector |
| IDE1 / IDE2 | EIDE Interface Connector (Header) |
| FDC1 | Floppy Interface Connector (Header) |
| PRT1 | Parallel Port Connector (Header) |
| VGA1 | VGA Connector (D-Sub Connector) |
| LCD1 | LCD Panel Connector |
| CON1 | Program ISP GAL Connector |
| IR1 | Alternate IrDa |

### 3.3.10 System Status Indicate and Control Connectors

- **J1 : Power LED, Key lock, Speaker, Reset, HDD LED**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | Power LED+ |
| 2 | GND |
| 3 | HD LEDD+ |
| 4 | HD LED- |
| 5 | RESET SW+ |
| 6 | RESET SW- |
| 7 | EXTERNAL SPEAKER |
| 8 | INTERNAL BUZZER |
| 9 | NC |
| 10 | EXTERNAL SPEAKER |

Default : 7-8 ON for internal buzzer

- **FAN1/FAN2 : Fan Connector**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | FAN Status |

FAN1 /

- **COM1 : RS-232 Serial Port #1 Connector ( D-Sub )**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | Data Carrier Detect ( DCDA # ) |
| 2 | Receive Data ( RXDA ) |
| 3 | Transmit Data ( TXDA ) |
| 4 | Data Terminal Ready ( DTRA # ) |
| 5 | Ground ( GND ) |
| 6 | Data Set Ready ( DSRA # ) |
| 7 | Request To Send ( RTSA # ) |
| 8 | Clear To Send ( CTSA # ) |
| 9 | Ring Indicator ( RIA # ) |

COM1

- **COM2 : RS-232 Serial Port #2 Connector ( Header )**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | DCDB # |
| 2 | SINB |
| 3 | SOUTB |
| 4 | DTRB # |
| 5 | Ground |
| 6 | DSRB # |
| 7 | RTSB # |
| 8 | CTSB # |
| 9 | RIB # |
| 10 | NC |

COM2

- **USBC1 : USB Connector**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | USB Port#0 $V_{CC}$ |
| 2 | USB Port#0 D0- |
| 3 | USB Port#0 D0+ |
| 4 | USB Port#1 Ground |
| 5 | Analog Ground |
| 6 | USB Port#1 $V_{CC}$ |
| 7 | USB Port#1 D1- |
| 8 | USB Port#1 D1+ |
| 9 | USB Port#1 Ground |
| 10 | Analog Ground |

- **KCN1 : 5-pin Keyboard Cable Connector**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | Keyboard Clock |
| 2 | Keyboard Data |
| 3 | NC |
| 4 | Ground |
| 5 | Vcc |

- **PKB1 : PS/2 Keyboard & Mouse Connector ( Mini-Din )**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | PS/2 Keyboard Data |
| 2 | PS/2 Mouse Data |
| 3 | Ground |
| 4 | Vcc |
| 5 | PS/2 Keyboard Clock |
| 6 | PS/2 Mouse Clock |

PKB1

- **LAN1 : Ethernet 100Base-T RJ-45 Connector**

| PIN NO. | Description | PIN NO. | Description |
|---|---|---|---|
| 1 | TX+ | 2 | TX- |
| 3 | RX+ | 4 | T45 |
| 5 | T45 | 6 | RX- |
| 7 | T78 | 8 | T78 |
| 9 | LINK_LED | 10 | Vcc |
| 11 | ACTIVE_LED | 12 | Vcc |
| 13 | GND | 14 | GND |

LAN1

- **IDE1 : IDE Cable Connector ( Header )**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | Reset # | 2 | Ground |
| 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 15 |
| 19 | Ground | 20 | NC |
| 21 | DMA REQ | 22 | Ground |
| 23 | IOW # | 24 | Ground |
| 25 | IOR # | 26 | Ground |
| 27 | IOCHRDY | 28 | NC |
| 29 | DMA ACK # | 30 | Ground |
| 31 | Interrupt | 32 | IOCS16 # |
| 33 | SA1 | 34 | NC |
| 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0 # | 38 | HDC CS1 # |
| 39 | HDD Active # | 40 | Ground |

- **FDC1 : Floppy Cable Connector ( Header )**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | Ground | 2 | Density Select |
| 3 | Ground | 4 | NC |
| 5 | Ground | 6 | NC |
| 7 | Ground | 8 | Index # |
| 9 | Ground | 10 | Motor Enable A # |
| 11 | Ground | 12 | Drive Select B # |
| 13 | Ground | 14 | Drive Select A # |
| 15 | Ground | 16 | Motor Enable B # |
| 17 | Ground | 18 | Direction # |
| 19 | Ground | 20 | Step # |
| 21 | Ground | 22 | Write Data # |
| 23 | Ground | 24 | Write Gate # |
| 25 | Ground | 26 | Track 0# |
| 27 | Ground | 28 | Write Protect # |
| 29 | NC | 30 | Read Data # |
| 31 | Ground | 32 | Head Side Select # |
| 33 | NC | 34 | Disk Change # |

- **PRT1 : Parallel Cable Connector ( Header )**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | Strobe # | 2 | Auto Form Feed # |
| 3 | Data 0 | 4 | Error # |
| 5 | Data 1 | 6 | Initialize # |
| 7 | Data 2 | 8 | Printer Select IN # |
| 9 | Data 3 | 10 | Ground |
| 11 | Data 4 | 12 | Ground |
| 13 | Data 5 | 14 | Ground |
| 15 | Data 6 | 16 | Ground |
| 17 | Data 7 | 18 | Ground |
| 19 | Acknowledge # | 20 | Ground |
| 21 | Busy | 22 | Ground |
| 23 | Paper Empty | 24 | Ground |
| 25 | Printer Select | 26 | NC |

- **VGA1 : VGA Connector**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | Red Color Signal |
| 2 | Green Color Signal |
| 3 | Blue Color Signal |
| 4 | NC |
| 5 | Ground |
| 6 | Ground |
| 7 | Ground |
| 8 | Ground |
| 9 | NC |
| 10 | Ground |
| 11 | NC |
| 12 | SPD |
| 13 | H-Sync. |
| 14 | V-Sync. |
| 15 | SPCLK |

VGA1

- **LCD1 : FLAT-PANEL INTERFACE CONNECTOR**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| A1 | DATA0 | B1 | DATA15 |
| A2 | DATA1 | B2 | DATA31 |
| A3 | DATA2 | B3 | DATA16 |
| A4 | DATA24 | B4 | DATA17 |
| A5 | DATA3 | B5 | DATA18 |
| A6 | DATA4 | B6 | DATA32 |
| A7 | DATA25 | B7 | GND |
| A8 | GND | B8 | SHFCLK |
| A9 | DATA5 | B9 | GND |
| A10 | DATA6 | B10 | DE |
| A11 | DATA26 | B11 | FLM |
| A12 | DATA7 | B12 | LP |
| A13 | DATA8 | B13 | GND |
| A14 | GND | B14 | DATA19 |
| A15 | DATA27 | B15 | DATA20 |
| A16 | DATA9 | B16 | GND |
| A17 | DATA10 | B17 | DATA21 |
| A18 | DATA28 | B18 | DATA22 |
| A19 | DATA11 | B19 | DATA33 |
| A20 | GND | B20 | DATA23 |
| A21 | DATA12 | B21 | DATA34 |
| A22 | DATA29 | B22 | ENABLE BACKLIHT |
| A23 | DATA13 | B23 | DATA35 |
| A24 | DATA30 | B24 | ENVCC |
| A25 | DATA14 | B25 | FVCC |
| A26 | ENAVEE | B26 | FVCC |

· **CON1 : Program ISP GAL Connector**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | VCC |
| 2 | SDO |
| 3 | SDI |
| 4 | ISP |
| 5 | NC |
| 6 | MODE |
| 7 | GND |
| 8 | SCLK |

· **IR1 : Alternate IrDA**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | VCC |
| 2 | NC |
| 3 | IRRX |
| 4 | GND |
| 5 | IRTX |

# 4. AWARD BIOS SETUP

Award‘s ROM BIOS provides a built-in Setup program that allows user to modify the basic system configuration and settings. The modified data will be stored in a battery-backed CMOS RAM so that these data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM stay unchanged unless there is configuration change in the system, such as hard drive replacement or new equipment is installed.

## 4.1 Running AWARD BIOS

The Setup Utility is stored in the BIOS ROM. When the power of the computer system is turned on, a screen message appears to give you an opportunity to call up the Setup Utility; while the BIOS will enter the Power On Self Test (POST) routines. The POST routines perform various diagnostic checks while initializing the board hardware. If the routines encounter an error during the tests, the error will be reported in either of the two different ways, hear a series of short beeps or see an error message on the screen display. There are two kinds of error: fatal or non-fatal. The system can usually continue to boot up sequence with the non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

“ Press <F1> to RESUME ”

Write down the message and press the F1 key to continue the boot up sequence. After the POST routines are completed, the following message appears:

“ Press DEL to enter SETUP ”

### Entering Setup

Turn on the power of the computer system and press <Del> immediately. If you don’t have the chance to respond, reset the system by simultaneously typing the <Ctrl>, <Alt> and <Delete> keys, or by pushing the ‘ Reset ’ button on the system cabinet. You can also restart by turning the system OFF then ON.

### 4.2 CMOS Setup Utility

To access the AWARD BIOS SETUP program, press the <DEL> key. The screen display will appears as :

## Main Program Screen

| ROM PCI / ISA BIOS (2A69KL7F)<br>CMOS SETUP UTILITY<br>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 |
| Time, Date, Hard Disk Type.... | |

This screen provides access to the utility's various functions.

Listed below are explanation of the keys displayed at the bottom of the screen:

**<ESC>** **:** Exit the utility.

**<↑ ↓ → ←>** **:** Use arrow keys ↑ ↓ → ← to move cursor to your desired selection.

**<F10>** **:** Saves all changes made to Setup and exits program.

**<Shift> <F2>** **:** Changes background and foreground colors.

### 4.3 Standard CMOS Setup

When you select the “STANDARD CMOS SETUP” on the main program, the screen display will appears as:

## Standard CMOS Setup Screen

```
                    ROM PCI / ISA BIOS(2A69KL7F)
                       STANDARD CMOS SETUP
                       AWARD SOFTWARE, INC.
Date    (mm : dd : yy) : Fri, Jul 30 1999
Time    (hh : mm : ss) : 13:42:18
HARD DISKS              TYPE   SIZE   CYLS   HEAD   PRECOMP   LANDZ   SECTOR   MODE
Primary Master          : Auto  0      0      0      0         0       0        AUTO
Primary Slave           : Auto  0      0      0      0         0       0        AUTO

Drive A     : 1.44M, 3.5 in.          Base Memory      :     640K
Drive B     : None                    Extended Memory  : 195584K
                                      Other Memory     :     384K
Video       : EGA/VGA                 Total Memory :       196608K
Halt On     : All Errors

ESC : Quit          ↑ ↓ → ← : Select Item      PU / PD / + / - : Modify
F1 : Help           (Shift ) F2 : Change Color
```

The Standard CMOS Setup utility is used to configure the following components such as date, time, hard disk drive, floppy drive, display and memory. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

**Set Date :** Month, Date, Year.

**Set Time :** Hour, Minute and Second. Use 24-hour clock format (for p.m. time, add 12 to the hour number, you would enter 4:30 p.m. as 16:30). When you select the “STANDARD CMOS SETUP” on the main program, the screen display will appears as:

**Hard Disks :** There are two hard disks listed: "Primary Master" and "Primary Slave". For each IDE channel, the first device is the " Master" and the second device is "Slave". Hard disk types from 1 to 45 are the standard ones. To select or change the configuration, move the cursor to the desired position and press <Page Up> or <Page Down> to change the option : (1) Press "Auto" for IDE HDD auto detection, (2) Press "User" for user definable, and Press "None" for not installed (e.g. SCSI). There are six categories of information that you must enter for a HDD: "CYLS." for (number of cylinders), "HEADS" for (number of heads), "PRECOMP" for (write pre-compensation), "LANDZ" for (landing zone), "SECTOR" for (number of sectors) and " MODE" for (Normal, LBA, LARGE and AUTO). The hard disk vendor's or system manufacturer's documentation should provide you with the drive specifications. For an IDE hard drive, you can set "TYPE" to "Auto" or use the "IDE HDD AUTO DETECTION" utility in the main program screen to enter the drive specifications.

Here is a brief explanation of drive specifications:

- Type : The BIOS contains a table of pre-defined drive types. Each defined drive type has specified number of cylinders, number of heads, write compensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as type USER.
- Size : Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a diskchecking program.
- Cyls : Number of cylinders.
- Head : Number of heads.
- Precomp : Write pre-compensation cylinder
- Landz : Landing zone.
- Sector : Number of sectors.
- Mode : Auto, Normal, Large, or LBA.
  - Auto: The BIOS automatically determines the optimal mode.
  - Normal: Maximum number of cylinders, heads, and sectors supported are 1024, 16, and 63.
  - Large: For drives that do not support LBA and have more than 1024 cylinders.
  - LBA (Logical Block Addressing): During drive accesses, the IDE controller transforms that data address described by sector, head, and cylinder number into a physical block address, significantly improving data transfer rates. For drives that greater 1024 cylinders. The AWARD BIOS supports three HDD modes: NORMAL, LBA and LARGE.

**NORMAL mode :** This is a Generic Access mode in which neither the BIOS nor the IDE controller will make any transformation during the accession. The maximum HDD size is supported by the NORMAL mode that is 528 Megabytes.

**LBA mode :** This is a Logical Block Addressing mode which is a HDD accessing method to overcome the 528 Megabytes restriction. The number of cylinders, heads and sectors that are shown in setup may not be the physical number contained in the HDD.
During the HDD accessing, the IDE controller will transform the logical address that is described by the cylinder, head and sector numbers into its own physical address as contained inside the HDD. The maximum HDD size that is supported by the LBA mode is 8.4 Gigabytes.

**LARGE mode :** Some IDE HDD contains more than 1024 cylinders without the LBA support. This access mode tricks DOS (or other OS) with the number of cylinders that 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 to the right HDD address. The maximum HDD size that is supported by the LARGE mode is 1 Gigabytes.

Note : 1. To support LBA or LARGE mode, there are software located in the AWARD HD Service Routine“INT13H”. It may fail to access a HDD with LBA or LARGE modes selected if you are running under an Operating System that replaces the whole INT13H service routine.
2. Entering incorrect drive specifications will result in a hard disk drive that will function improperly or no function at all.

**Drive A and Drive B :** Select the correct specifications for the diskette drive(s) installed in the computer.

| | |
|---|---|
| None | No diskette drive installed |
| 360K, 5.25 in | 5-1/4 inch PC-type standard drive; 360 kilobyte capacity |
| 1.2M, 5.25 in | 5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity |
| 720K, 3.5in | 3 1-2 inch double-sided drive; 720 kilobyte capacity |
| 1.44M, 3.5 in | 3 1-2 inch double-sided drive; 1.44 megabyte capacity |
| 2.88M, 3.5 in | 3 1-2 inch double-sided drive; 2.88 megabyte capacity |

Note : 1. Not Installed could be used as an option for diskless workstations..
2. Highlight the listing after each drive name and select the appropriate entry.

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

| | |
|---|---|
| EGA/VGA | Enhanced Graphics Adapter/Video Graphics Array.<br>For EGA, VGA, SEGA, SVGA 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 |

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

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

### 4.4 BIOS Features Setup

When you select the “BIOS FEATURES SETUP” on the main program, the screen display will appears as:

## BIOS Features Setup Screen

ROM PCI / ISA BIOS (2A69KL7F)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC

| | | | |
|---|---|---|---|
| Virus Warning | : Disabled | Video BIOS Shadow | : Enabled |
| CPU Internal Cache | : Enabled | C8000-CBFFF Shadow | : Enabled |
| External Cache | : Enabled | CC000-CFFFF Shadow | : Disabled |
| CPU L2 Cache ECC Checking | : Disabled | D0000-D3FFF Shadow | : Disabled |
| | | D4000-D7FFF Shadow | : Disabled |
| Quick Power On Self Test | : Enabled | D8000-DBFFF Shadow | : Disabled |
| Boot Sequence | : A,C,SCSI | DC000-DFFFF Shadow | : Disabled |
| Swap Floppy Drive | : Disabled | | |
| Boot Up Floppy Seek | : Disabled | | |
| Boot Up NumLock Status | : On | | |
| Gate A20 Option | : Fast | | |
| Typematic Rate Setting | : Disabled | | |
| Typematic Rate (Chars Sec.) | : 6 | | |
| Typematic Delay (M/Sec) | : 250 | | |
| Security Option | : Setup | | |
| PS/2 mouse function control | : Enabled | | |
| PCI/VGA Palette Snoop | : Disabled | ESC : Quit | ↑↓→← : Select Item |
| Assign IRQ For VGA | : Disabled | F1 : Help | PU /PD /+/ - : Modify |
| OS Select For DRAM >64MB | : Non-OS/2 | F5 : Old Values | (Shift) F2 : Color |
| Report No FDD For WIN 95 | : No | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

The following explains the options for each of the features as listed in the above menu:

**Virus Warning :** The default setting of the Virus Warning is “Disabled”. When it is enabled, any attempt to write the boot sector and partition table will halt the system and cause a warning message to appear. If this happens, you can use an anti-virus utility on a virus free, bootable floppy diskette to reboot, to clean and to investigate your system.

**CPU Internal Cache :** The default setting is “Enabled”. This setting enables the CPU internal cache.

**External Cache :** The default setting is "Enabled". This setting enables the external cache.

**CPU L2 Cache ECC Checking :** The default setting is "Disabled". When you select Enabled, memory checking is enable when the external cache contains ECC SRAMs.

**Quick Power On Self Test :** The default setting is "Enabled". This speeds up the Power On Self Test (POST) by skipping some items that are normally checked during the full POST. If your system is functioning normally, you can choose this feature to speed the booting process.

**Boot Sequence :** The default setting is "A:,C:, SCSI"; the other options are "CDROM, C, A" and "A, C" and "C, CDROM, A". This setting determines where the computer looks first for an operating system, the hard disk, or the floppy disk, … or other. The BIOS will load the operating system from the disk drives in the sequence as selected here.

**Swap Floppy Drive :** The default setting is "Disabled". This setting gives you an option to swap A and B floppy disks. Normally, the floppy drive A is the one at the end of the cable and drive B is at the other end. If you set this option to "Enabled", the Drive A will function as Drive B, and vice-versa under the DOS.

**Boot Up Floppy Seek :** The defaults setting is "Enabled". When enabled, the BIOS will check whether there is a floppy disk drive installed.

**Boot Up Numlock Status :** The default setting is "On". If set "Off", the cursor controls will function on the numeric keypad.

**Gate A20 Option :** The default setting is "Fast". This is the optimal setting for the CPU card. The other option is "Normal".

**Typematic Rate Setting :** The default setting is "Disabled". If enabled, you can set the typematic rate and typematic delay.

**Typematic Rate (Chars/Sec) :** This setting controls the speed at which the system registers the repeated keystrokes. The choices range from 6 to 30 Chars/Sec. The default setting is "6" Chars/Sec.

**Typematic Delay (Msec) :** This setting controls the time between the display of the first and second characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms. The default setting is "250" ms.

**Security Option :** This setting controls the password in the main screen. The options are "Setup" and "System". Select "Setup" and it will protect the Setup Utility settings from being tampered with. Select "System" if you want to use password feature every time the system boots up. The default setting is "Setup". You can create your password by using the "SUPERVISOR/USER PASSWORD" utility on the main program screen.

**PS/2 mouse function control :** The default setting is "Enabled". If your system has a PS/2 mouse port and you install a serial pointing device, select Disabled.

**PCI/VGA Palette Snoop :** The default setting is “Disabled”. Set to “Enable” if any ISA adapter card installed requires VGA palette snooping.

**Assign IRQ For VGA :** Select “Enabled” only if your VGA Card requires an assigned IRQ.

**Report No FDD For Win95 :** Select “Yes” to release IRQ6 when the system contains no floppy drive, for compatibility with Windows 95 logo certification. In the Integrated Peripherals screen select “Disabled” for the Onboard FDC Controller field.

**OS Select For DRAM > 64MB :** The default setting is “Non-OS2”. Set to “OS2” if the system memory size is greater than 64MB and the operating system is OS/2.

**Video BIOS Shadow :** The default setting is “Enabled” which will copy the VGA display card BIOS into system DRAM to improve performance.

**C8000-CBFFF Shadow to DC000-DFFFF Shadow :** The default setting for the shadow feature is “Disabled”. When enabled, the ROM with the specific address is copied into system DRAM. It will also reduce the size of memory available to the system. After you have made your selection in the BIOS FEATURES SETUP, press the <ESC> key to go back to the main program screen.

### 4.5 Chipset Features Setup

When you select the "CHIPSET FEATURES SETUP" on the main program, the screen display will appears as:

## Chipset Features Setup Screen

ROM PCI / ISA BIOS (2A69KL79)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

| | | | |
|---|---|---|---|
| AUTO Configuration | : Enabled | Auto Detect DIMM Clk | : Enabled |
| EDO DRAM Speed Selection | : 60 ns | Spread Spectrum Modulated | : Disabled |
| EDO CASx# MA Wait State | : 2 | CPU Host Clock | : 66 MHz |
| EDO RASx# Wait State | : 2 | CPU Warning Temperature | : Disabled |
| SDRAM RAS-to-CAS Delay | : 3 | Current CPU Temperature | : 27°C/ 80°F |
| SDRAM RAS Precharge Time | : 3 | Current System Temp. | : 33°C/91°F |
| SDRAM CAS latency Time | : Auto | Current CPU FAN Speed | : 3720 RPM |
| SDRAM Precharge Control | : Disabled | Current System FAN Speed | : 0RPM |
| DRAM Data Integrity Mode | : Non-ECC | Current Vdd (V) | : 5.05V |
| System BIOS Cacheable | : Disabled | Current Vin1 (V) | : 3.28V |
| Video BIOS Cacheable | : Disabled | Current Vin2 (V) | : 11.86V |
| Video RAM Cacheable | : Disabled | Current Vin3 (V) | : 2.03V |
| 8 Bit I /O Recovery Time | : 1 | | |
| 16 Bit I /O Recovery Time | : 1 | | |
| Memory Hole At 15M-16M | : Disabled | | |
| Passive Release | : Enabled | ESC : Quit | ↑↓→←: Select Item |
| Delayed Transaction | : Disabled | F1 : Help | PU /PD /+/ - : Modify |
| AGP Aperture Size (MB) | : 64 | F5 : Old Values | (Shift) F2 : Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

**Auto Configuration :** The default setting is "Enabled" which will optimize DRAM timing automatically depending on whether the DRAM used is either 70ns or 60ns. The other option is "Disabled" which allows you to change DRAM timing manually.

**EDO DRAM Speed Selection :** The value in this field must correspond to the speed of the DRAM installed in your system. DO NOT change the default setting of this field, as

determined by the system board manufacturer for the installed DRAM. This value is access speed, so a lower value means a faster system.

**EDO CASx# MA Wait State :** The system board designer may elect to insert a wait state into EDO CASx# Memory addressing cycle, if necessary. CAS stands for Column Address Select.
**EDO RASx# Wait State :** The system board designer may elect to insert a wait state into EDO RASx# Memory addressing cycle, if necessary. RAS stands for Row Address Select.

**SDRAM RAS to CAS Delay :** This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

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

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

**SDRAM CAS Latency Time :** When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

**DRAM Data Integrity Mode :** Select Parity or ECC (error-correcting code), according to the type of installed DRAM.

**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 eror may result.

**Video RAM 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 memory access 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 :** The default setting is “Disabled”. Set to “Enabled” when the system memory size is equal to or greater than 16M bytes, then the physical memory address from 15M to 16M will be passed to PCI or ISA. Thus, there will be 1M Bytes hole in your system memory. This option is designed for some OS with special add-on cards which need 15M-16M memory space.

**Passive Release :** The default setting is "Enabled". When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

**Delayed Transaction :** The default setting is "Disabled". The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

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

**Auto Detect DIMM Clk :** The default setting is "Enabled". To reduce the occurrence of electromagnetic interference (EMI), the BIOS detects the presence or absence of components of DIMM and PCI slots and turns off system clock generator pulses to empty slots.

**Spread Spectrum Modulated :** When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme values from spikes to flat curves, thus reducing EMI,

**CPU Host Clock :** Select default or select a timing combination for the CPU and the PCI bus. When set to default, the BIOS uses the actual CPU and PCI bus clock values.

**CPU Warning Temperature :** The default setting is "66$^{o}$C/151$^{o}$F". Select the combination of lower and upper limits for the CPU temperature. If the CPU temperature extends beyond either limit, any warning mechanism programmed into your system will be activated.

**Current CPU Temperature :** The itself of CPU is "27$^{o}$C/80$^{o}$F". This field displays the current CPU temperature, if your computer contains a monitoring system.

**Current System Temp. :** The itself of system is "33$^{o}$C/91$^{o}$F". This field displays the current system temperature, if your computer contains a monitoring system.

**Current CPU FAN Speed :** The FAN of CPU is "3720 RPM". This field displays the current speed of the CPU fan, if your computer contains a monitoring system.

**Current System FAN Speed :** This field displays the current speed of the system Fan, if your computer contains a monitoring system,

**Current Vdd (V), Current Vin1 (V), Current Vin2 (V) and Current Vin3 (V):** This field detects the voltage input of the board, if your computer contains a monitoring system.

After you have made your selections in the CHIPSET FEATURES SETUP, press the <ESC> key to go back to the main program screen.

### 4.6 Power Management Setup

The "Power Management Setup" controls the CPU card's "Green" features. When you select the "POWER MANAGEMENT SETUP" on the main program, the screen display will appears as:

## Power Management Setup Screen

ROM PCI / ISA BIOS (2A69KL7F)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

| | | | |
|---|---|---|---|
| Power Management | : User Define | ** Reload Global Timer Events ** | |
| PM Control by APM | : Yes | IRQ [3 – 7, 9 – 15], NMI | : Disabled |
| Video Off Method | : V /H SYNC+ Blank | Primary IDE 0 | : Disabled |
| Video Off After | : Standby | Primary IDE 1 | : Disabled |
| MODEM Use IRQ | : 3 | Secondary IDE 0 | : Disabled |
| Doze Mode | : Disabled | Secondary IDE 1 | : Disabled |
| Standby Mode | : Disabled | Floppy Disk | : Disabled |
| Suspend Mode | : Disabled | Serial Port | : Disabled |
| HDD Power Down | : Disabled | Parallel Port | : Disabled |
| Throttle Duty Cycle | : 62.5% | | |
| PCI / VGA Act-monitor | : Disabled | | |
| PowerOn by Ring | : Disabled | | |
| IRQ 8 Break Suspend | : Disabled | | |
| | | ESC : Quit | ↑↓→← : Select Item |
| | | F1 : Help | PU /PD/+/- : Modify |
| | | F5 : Old Values | ( Shift ) F2 : Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

**Power Management :** This setting controls the System Doze Mode, Standby Mode and Suspend Mode Timer features. There are four options namely –

- **User Define :** Allows you to customize all power saving timer features.
- **Optimize :** This is the recommended setting for general use.
- **Test/Demo :** This is for test/demonstration purpose.
- **Disable :** Disable the power management features.

**PM Control by APM :** The default setting is "No". If it is set to "Yes", the system BIOS will wait for APM's prompt before it enters any PM mode.

Note : If your system power management is controlled by APM and there is a task running, the APM will not prompt the BIOS to enter any power saving mode after time out.

**Video Off Method :** This setting controls the Video off method in power saving mode. The default setting is "V/H SYNC+Blank". This setting disables V/H SYNC signals and blanks the screen into the power saving mode. Other options are "Blank Screen" and "DPMS".

**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. The default setting is "Standby".

**MODEM Use IRQ :** Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. The default setting is "3".

**Doze Mode :** Options are from "1 Min." to "1 Hour" and "Disable". The system speed will change from turbo to slow and the video signal will be suspended, if no Power Management events occur for a specified length of time. Full power function will return when a Wake-Up event is detected.

**Standby Mode :** Options are from "1 Min" to "1 Hour" and "Disable". The system speed will change from turbo to slow and the video signal will be suspended, if no Power Management events occur for a specified length of time. Full power function will return when a Wake-Up event is detected.

**Suspend Mode :** Option are from "1 Min" to "1 Hour" and "Disable". The CPU clock will be stopped and the video signal will be suspended, if no Power Management events occur for a specified length of time. Full power function will return when a Wake-Up event is detected.

**HDD Power Down :** Options are from "1 Min." to "15 Min." and "Disable". The IDE hard drive will spin down if it is not accessed within a specified length of time.

**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.

**PCI/VGA Act-Monitor :** When Enabled, any video activity restarts the global timer for Standby mode. The default setting is "Disabled".

**PowerOn by Ring :** When "Enabled", an input signal on the serial Ring Indicator (RI) line awakens the system from soft off state.

**IRQ8 Clock Event :** 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.

**IRQ [3-7, 9-15], NMI**
**Primary IDE 0**
**Primary IDE 1**
**Secondary IDE 0**
**Secondary IDE 1**
**Floppy Disk**
**Serial Port**
**Parallel Port**

After you have made your selection in the POWER MANAGEMENT SETUP, press the <ESC> key to go back to the main program screen.

## 4.7 PnP/PCI Configuration

Both the ISA and PCI buses on the CPU card use system IRQs & DMAs. You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configuration Setup utility, otherwise the SBC will not work properly.

When you select the "PnP /PCI CONFIGURATION" on the main program, the screen display will appears as:

## PnP/PCI Configuration Setup Screen

ROM PCI / ISA BIOS (2A69KL7F)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

| | | | |
|---|---|---|---|
| PNP OS Installed | : No | Used MEM base addr | : N/A |
| Resources Controlled By | : Manual | | |
| Reset Configuration Data | : Disabled | Assign IRQ For USB | : Enabled |
| IRQ-3 assigned to | : Legacy ISA | | |
| IRQ-4 assigned to | : Legacy ISA | | |
| IRQ-5 assigned to | : PCI/ISA PnP | | |
| IRQ-7 assigned to | : Legacy ISA | | |
| IRQ-9 assigned to | : PCI/ISA PnP | | |
| IRQ-10 assigned to | : PCI/ISA PnP | | |
| IRQ-11 assigned to | : PCI/ISA PnP | | |
| IRQ-12 assigned to | : Legacy ISA | | |
| IRQ-14 assigned to | : Legacy ISA | | |
| IRQ-15 assigned to | : Legacy ISA | | |
| DMA-0 assigned to | : PCI/ISA PnP | | |
| DMA-1 assigned to | : PCI/ISA PnP | ESC : Quit | ↑↓→← : Select Item |
| DMA-3 assigned to | : PCI/ISA PnP | F1 : Help | PU /PD/+/- : Modify |
| DMA-5 assigned to | : PCI/ISA PnP | F5 : Old Values | ( Shift ) F2 : Color |
| DMA-6 assigned to | : PCI/ISA PnP | F6 : Load BIOS Defaults | |
| DMA-7 assigned to | : PCI/ISA PnP | 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 defaults setting is "Auto" which will control all IRQs and DMAs automatically. The other option is "Manual" which allows you to control IRQs and DMAs individually.

**Reset Configuration Data :** The default setting is “Disabled”. When set to “Enabled”, the content of the ESCD block in flash BIOS will be cleared.
**IRQ Assigned to and DMA Assigned to :** If there is a legacy ISA device which uses an IRQ or a DMA, set the corresponding IRQ or DMA to “ Legacy ISA”; otherwise you should set to PCI/ISA PnP.

**Used MEM base addr :** Because BIOSes fail to auto detect some specific ISA Legacy cards with requested memory space below 1M address, we have added the “Used MEM base addr” and “Used MEM Length” to support such kind of cards. Now, with these two functions, users can define where the used memory address is located and its length of the legacy area correspondingly. Based on this, BIOS will skip the UMB area that is used by the legacy device to avoid the memory space conflict. For example, if the user select “D000” for “Used MEM base addr” and “16K” for “Used MEM Length” that means the address region D0000H-D3FFFH is occupied by ISA legacy cards, and BIOS will not assign this region for PnP/ISA and PCI cards.

**Assign IRQ For USB :** To use USB feature, set the IRQ to “Enabled”. The default setting is “Enabled”.

## 4.8 Load BIOS Defaults

The BIOS defaults have been set by the manufacturer which represent settings provided with the minimum requirements for your system to operate. " **Load BIOS Defaults** " loads the troubleshooting default values permanently recorded in the BIOS ROM. These settings are non-optimal and turn off all high performance features.

The Standard CMOS Setup screen is not affected. To use this feature, highlight it on the main screen and press <Enter>. A line will appear asking if you want to load the BIOS default values. Press the <Y> key and the <Enter>. The default settings will load. Press <N> if you do not want to proceed.

| ROM PCI / ISA BIOS (2A69KL7F)<br>CMOS SETUP UTILITY<br>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 DEFAU** | IT SET\\UP |
| LOAD SETUP DEFAULTS | EXIT WITHOUT SAVING |
| ESC : Quit | ↑ ↓ → ← : Select Item |
| F10 : Save & Exit Setup | (Shift) F2 : Change Color |
| Time, Date, Hard Disk Type.... | |

Load BIOS Default (Y/N)? Y

## 4.9 Load Setup Defaults

"LOAD SETUP DEFAULTS" loads the optimal settings which are stored in BIOS ROM. The defaults loaded affect only the BIOS Features Setup, Chipset Features Setup, Power Management Setup, PnP/PCI configuration setup and Integrated Peripherals Setup. There is no effect on the Standard CMOS Setup. To use this feature, highlight the entry on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the Setup default values. Press the <Y> key and then press the <Enter> key if you want to load the Setup defaults. Press <N> if you do not want to proceed.

### 4.10 Integrated Peripherals

When you select the "INTEGRATED PERIPHERIALS" on the main program, the screen display will appears as:

## Integrated Peripherals Setup Screen

ROM PCI / ISA BIOS (2A69KL7F)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

| | | | | |
|---|---|---|---|---|
| IDE HDD Block Mode | : Enabled | | | |
| IDE Primary Master PIO | : Auto | Onboard Parallel Port | | : 378/IRQ7 |
| IDE Primary Slave PIO | : Auto | Parallel Port Mode | | : SPP |
| IDE Primary Master UMDA | : Auto | | | |
| IDE Primary Slave UMDA | : Auto | | | |
| On-Chip Primary PCI IDE | : Enabled | | | |
| On-Chip Secondary PCI IDE | : Enabled | | | |
| USB Keyboard Support | : Disabled | | | |
| Init display First | : PCI Slot | | | |
| KBC input clock | : 8 MHz | | | |
| Onboard FDC Controller | : Enabled | ESC | : Quit | ↑↓→← : Select Item |
| Onboard Serial Port 1 | : 3F8 / IRQ4 | F1 | : Help | PU /PD/+/- : Modify |
| Onboard Serial Port 2 | : 2F8 / IRQ3 | F5 | : Old Values | ( Shift ) F2 : Color |
| UART Mode Select | : Normal | F6 | : Load BIOS Defaults | |
| | | F7 | : Load Setup Defaults | |

**IDE HDD Block Mode :** The Default setting is "Enabled". This feature enhances the hard disk performance by making multi-sector transfers instead of one sector per transfer. Most IDE drives, except the very early design, have Block Mode transfer feature.

**IDE Primary Master PIO, IDE Primary Slave PIO :** There are four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the two 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 Master UMDA, IDE Primary Slave UMDA :** Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Window 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 PCI IDE :** The default setting is "Enabled". This option enables the onboard Primary /Secondary PCI IDE controller.

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

**Init Display First :** Initialize the AGP video display before initializing any other display device on the system Thus the AGP display becomes the primary display.

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

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

**Onboard Serial Port 1 / 2:** These options are used to assign the I/O addresses for the two on-board serial ports. They can be assigned as follows:

Auto
3F8 / IRQ4 (Serial Port 1 Default)
2F8 / IRQ3 (Serial Port 2 Default)
3E8 / IRQ4
2E8 / IRQ3
Disabled (Disable the onboard serial port)

**UART Mode Select :** Select an operating mode for the second serial port. They can be assigned as follows:

| | |
|---|---|
| Normal | RS-232C serial port |
| IrDA | Infrared Port |
| ASKIR | Amplitude Shift Keyed Infrared Port |

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

**Onboard Parallel Port :** This option is used to assign the I/O address for the onboard parallel port. The options are “378/IRQ7” (defaults), “278/IRQ7”, “3BC/IRQ7” and “Disabled” (disable the onboard parallel port). Note: Printer port always use IRQ7 when set to “378/IRQ7” or “278/IRQ7”, or from “3BE/IRQ7” to “Enabled”.

**Parallel Port Mode :** There are four options “Normal” (default), “ECP”, “ECP/EPP” and “EPP/SPP”. Change the mode from “Normal” to the enhanced mode only if your peripheral device can support it. When it is set to ECP mode, the printer port always uses DMA3.

### 4.11 Supervisor/User Password

The “SUPERVISOR/USER PASSWORD” utility sets the password. The SBC is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt -- enter your new password. The password is case sensitive, and can be up to 8 alphanumeric characters. Press <Enter> after you have finished typing in the password. At the next prompt, confirm the new password by re-typing it and pressing <Enter> again. When you are done, the screen automatically reverts to the main screen. Remember that when you use this feature, the “Security Option” line in BIOS FEATURES SETUP will determine when entering the password will be required.

**To disable the password**, press the <Enter> key instead of entering a new password when the “Enter Password” in the dialog box appears. A message will appear confirming that the password is disabled.

If you have set both supervisor and user password, only the supervisor password allows you to enter the BIOS SETUP PROGRAM.
Note : If you forget your password, the only way to solve this problem is to discharge the CMOS memory.

## 4.12 IDE HDD Auto Detection

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.
If the auto-detected parameters displayed do not match the ones that should used for your hard drive, do not accept them. Press the <N> key to reject the values and enter the correct ones manually on the Standard CMOS Setup screen.

Note : If you are setting up a new hard disk drive (nothing on it) that supports LBA mode, more than one line will appear in the parameter box, choose the line that lists LBA for an LBA drive.

Do not choose Large or Normal if the hard disk drive is already fully formatted when you install it, choose the mode "HDD Low Level Format" to format it.

## 4.13 HDD Low Level Format

Select and highlight this option press the <Enter> key to enable you to perform the low level format of hard disk drive.

## 4.14 Save & Exit Setup

Select this option and press the <Enter> key to save the new setting information in the CMOS memory and continue with the booting process.

## 4.15 Exit Without Saving

Select this option and press the <Enter > key to exit the Setup Utility without recording any new values or changing old ones.

# 5. DRIVERS SUPPORT

## 5.1 Use Your Driver CD-ROM

This chapter provides information on how to install the drivers that come in the CD-ROM with the package. Please follow the instructions set forth in this chapter carefully.

1. Find the VGA or LAN directory first.
2. Find the directory for your O/S accordingly.
3. Always read the README.TXT before installation.
4. Run the *.EXE, and follow the installation prompt step by step.

# 6. LCD SUPPORT

## 6.1 LCD Support List

| KIT No. | Panel No. | Bios Name |
|---|---|---|
| LK-027 | LQ15X0125 | ECB-662 V10.BIN |
| LK-027 | LQ150X1DG16 | ECB-662 2D.BIN |
| LK-028 | LQ121SDG11 | ECB-662 V10.BIN |
| LK-029 | LQ10D42 | ECB-662 V10.BIN |
| LK-034(2MB) | LTM150XS-T01 | ECB-662 2B.BIN |
| LK-034(4MB) | LTM150XS-T01 | ECB-662 4B.BIN |
| LK-018(2MB) | LQ150X1DG16 | ECB-662 2A.BIN |
| LK-018(4MB) | LQ150X1DG16 | ECB-662 4A.BIN |

## 6.2 LCD Kit Instructions

**LK-018:**

Cable :

| Code | Parts No. | Cable Type | Pin to Pin | Length | Q'ty |
|---|---|---|---|---|---|
| C15 | 0800603200001 | LVDS 20 to 20 pin Cable | LVDS 20 to 20 pin | 250 mm | 1 |
| C52 | 0800312520001 | LCDA3 52 to 52 pin Cable | 52 to 52 pin | 250 mm | 1 |

Interface :

| Code | Parts No. | Interface Type | Version | Size |
|---|---|---|---|---|
| A7 | S01LCDA200410 | AP-LCDA2 | Ver. 1.1 | 74.00 x 70.00 mm |
| A8 | S01LCDA300110 | AP-LCDA3 | Ver. 1.0 | 95.88 x 90.17 mm |

**LK-027**

Packing List

| Code | Parts No. | Description | | Length | Q'ty |
|---|---|---|---|---|---|
| C6 | 0800307200002 | 20-pin to 20-pin | | 660 mm | 1 |
| C52 | 0800312520001 | 52-pin to 52-pin | | 250 mm | 1 |
| Code | Parts No. | Interface Type | Version | Size | Q'ty |
| A7 | S01LCDA200410 | AP-LCDA2 | 1.1 | 74 x 70 mm | 1 |
| A8 | S01LCDA300110 | AP-LCDA3 | 1.0 | 31 x 23 mm | 1 |

Installation

| Connection | | | | | | | |
|---|---|---|---|---|---|---|---|
| CPU BOARD | C52 | AP-LCDA3 | | C6 | AP-LCDA2 | | Panel |
| LCD1 | | CN4 | LVDS3 | | LVDS1 | CON1 | |

Note :

1. Set jumper JP1 on A8 to 5V.
2. Set jumper JP3 on A8 to +Vee.
3. Connect each side of C52 to LCD1 on CPU board and CN4 on A8.
4. Connect each side of C6 to LVDS3 on A8 and LVDS1 on A7.
5. Connect CON1 on A7 to panel.

**LK-028**

Packing List

| Code | Parts No. | Description | | Length | Q'ty |
|---|---|---|---|---|---|
| C18 | 0800313410001 | 41-pin to 15 / 15-pin | | 600 mm | 1 |
| Code | Parts No. | Interface Type | Version | Size | Q'ty |
| A13 | S01LCDA700110 | AP-LCDA7 | 1.0 | 14.48 x 44.25 mm | 1 |

Installation

| Connection | | | | | |
|---|---|---|---|---|---|
| CPU BOARD | LCD1 | A13 | CN1 / 3 | C18 | Panel |
| LCD1 | | | CN2 | | |

Note :

1. Connect 15-pin connector which has yellow wires on pin 1 to pin 3 of C18 to CN1/3 on A13.
2. Connect 15-pin connector which has red wires on pin 1 and pin 2 of C18 to CN2 on A13.
3. Connect LCD1 of A13 to LCD1 on CPU board.
4. Connect 41-pin connector of C18 to LCD panel.

**LK-029**

Packing List

| Code | Parts No. | Description | | Length | Q'ty |
|---|---|---|---|---|---|
| C19 | 0800313310001 | 31-pin to 15 / 15-pin | | 600 mm | 1 |
| Code | Parts No. | Interface Type | Version | Size | Q'ty |
| A13 | S01LCDA700110 | AP-LCDA7 | 1.0 | 14.48 x 44.25 mm | 1 |

Installation

| Connection | | | | | |
|---|---|---|---|---|---|
| CPU BOARD | LCD1 | A13 | CN1 / 3 | C19 | Panel |
| LCD1 | | | CN2 | | |

Note :

1. Connect 15-pin connector which has "yellow wires" on pin 1 to pin 3 of C19 to CN1/3 on A13.
2. Connect 15-pin connector which has "red wires" on pin 1 and pin 2 of C19 to CN2 on A13.
3. Connect LCD1 of A13 to LCD1 on CPU board.
4. Connect 31-pin connector of C19 to LCD panel.

## LK-034

Packing List

| Code | Parts No. | Description | | Length | Q'ty |
|---|---|---|---|---|---|
| C21 | 0800357500001 | 50-pin to 25 / 30-pin | | 500 mm | 1 |
| Code | Parts No. | Interface Type | Version | Size | Q'ty |
| A16 | S01LCDA100Y10 | AP-LCDA10 | 0.0 | 22.00 x 44.10 mm | 1 |

Installation

| Connection | | | | | |
|---|---|---|---|---|---|
| CPU BOARD<br>LCD1 | CN1 | A16 | LCD1 | C21 | Panel |

Note :
1. Connect 50-pin connector of C21 to LCD1 on A16.
2. Connect CN1 of A16 to LCD1 on CPU board.
3. Connect 25-pin and 30-pin connectors of C21 to LCD panel.

# 7. HOW TO USE WATCH-DOG TIMER

**You can enable the watch-dog when your application software monitors an unexpected or not respond, then the timer generates a reset to reboot your system. During the period of enable to reset, you could still cancel reset by disable the watch-dog. Decision the way you want to set the period for reset by select hardware or software watch-dog (if both of them are available). For hardware setting period, select period by jumper. For software setting period, normally setting hardware watch-dog timer period to 16 sec.**

## Hardware watch-dog using example

EX.1: For DOS
Execute the **DEBUG.EXE** under DOS, Then key-in **i443**. The system will reboot automatically according to the time-out you set.

| ***Enable*** | ***Disable*** |
|---|---|
| C:\DOS> DEBUG | C:\DOS>DEBUG |
| -i443 | -i43 |

**EX.2: For assemble Language**

| **Enable:** | **Disable:** |
|---|---|
| MOV DX, 443H | IN AL, 43H |
| IN AL, DX | |

## Software watch-dog using example

**EX.1: For DOS**

| ***Enable*** | ***Disable*** |
|---|---|
| C:\DOS> DEBUG | C:\DOS>DEBUG |
| -o443F | -o441F |

**EX.2: For assemble Language**

| ***Enable:*** | ***Disable:*** |
|---|---|
| MOV DX, 443H | MOV DX, 441H |
| MOV AL, 0FH | MOV AL, 0FH |
| OUT DX, AL | OUT DX, AL |

Note : “F” is the period of software watch-dog timer (normally “F” indicated 0 sec.). 0 to 9 and A to F are used for represent different period. Normally, the step is 2 sec. That means “E” is 2, “D” is 4, “2” is 26, “1” is 28 and “0” is 30 seconds.

# 8. TECHNICAL REFERENCE

## I/O PORT ADDRESS MAP

| Address | Function |
|---|---|
| 000 - 01F | DMA Controller #1 |
| 020 - 03F | Interrupt Controller #1 |
| 040 - 05F | Timer Chip |
| 043 | Disable Watch-Dog Times Operation (Read) |
| 060 - 06F | Keyboard Controller |
| 070 - 07F | Read Time Clock/NMI Mask |
| 080 - 09F | DMA Page Register |
| 0A0 - 0BF | Interrupt Controller #2 |
| 0C0 - 0DF | DMA Controller #2 |
| 0F0 - 0F1 | Clear/Reset Math Coprocessor |
| 1F0 - 1F7 | Hard Disk Controller |
| 200 - 210 | Game Port |
| 278 - 27F | Parallel Port #2 |
| 2E8 - 2EF | Serial Port #4 (COM 4) |
| 2F8 - 2FF | Serial Port #2 (COM 2) |
| 300 - 31F | prototype Card/Streaming Tape Adapter |
| 360 - 36F | PC Network |
| 378 - 3FF | Parallel Port #1 |
| 380 - 38F | SDLC #2 |
| 3A0 - 3AF | SDLC #1 |
| 3B0 - 3BF | MDA Video Card (Including LPTO) |
| 3C0 - 3CF | EGA Card |
| 3D0 - 3DF | CGA Card |
| 3E8 - 3EF | Serial Port #3 (COM 3) |
| 3F0 - 3F7 | Floppy Disk Controller |
| 3F8 - 3FF | Serial Port #1 (COM 1) |
| 443 | Enable Watch-dog Timer Operation (read) |

## MEMORY ADDRESS MAP

| Address Range (Hex) | Description |
|---|---|
| 000000H - 09FFFFH | 640 KB of Conventional RAM |
| 0A0000H - 0BFFFFH | 128 KB of Video RAM |
| 0C0000H - 0EFFFFH | 256 KB of I/O Expansion ROM |
| 0F0000H - 0FFFFFH | 64 KB of System BIOS ROM |
| 0100000H - 7FFFFFFFH | 1 MB ~ 128MB of User RAM |

## DMA CHANNELS

| CHANNEL | Function |
|---|---|
| DMA 0 | Reserved |
| DMA 1 | Reserved |
| DMA 2 | Floppy Disk Controller |
| DMA 3 | ECP Parallel Port |
| DMA 4 | Cascade for DMA #1 |
| DMA 5 | Reserved |
| DMA 6 | Reserved |
| DMA 7 | Reserved |

## INTERRUPT CONTROLLER

| IRQ | Function |
|---|---|
| IRQ 0 | System timer output |
| IRQ 1 | Keyboard |
| IRQ 2 | Cascade for INTC #2 |
| IRQ 3 | Serial port #2 |
| IRQ 4 | Serial port #1 |
| IRQ 5 | Parallel port #2 |
| IRQ 6 | Floppy disk controller |
| IRQ 7 | Parallel port #1 |
| IRQ 8 | Real time clock |
| IRQ 9 | Software redirected to INT 0AH (IRQ 2) |
| IRQ 10 | Reserved |
| IRQ 11 | Reserved |
| IRQ 12 | PS/2 Mouse |
| IRQ 13 | Math Coprocessor (CPU Internal) |
| IRQ 14 | Primary Hard disk |
| IRQ 15 | Secondary Hard Disk |
| NMI | Parity Check Error |

# 9. GLOSSARY

**8-Bit Bus –** Data is transmitted to expansion slots and other components on the bus only along 8 parallel data line.

**10Base-T –** It is a 10Mbps IEEE 802.3/Ethernet standard that uses unshielded twisted pair cable specification. 10Base-T supports network configuration using the CSMA/CD access method over a twisted pair transmission system up to 100 meters in length without the use of repeater.

**16-Bit Bus or ISA Bus –** Data is transmitted along either 8 or 16 data lines, depending on what kind of adapter card is used in an expansion slot. ISA is the abbreviation of Industry Standard Architecture.

**100Base-TX –** It is a 100Mbps IEEE 802.3/Ethernet standard that uses UTP cable. Also called Fast Ethernet, it uses RJ-45 connectors and EIA/TIA T568B pinning. Maximum cable length from hub to node is 100 meters without a repeater.

**Adapter –** It is also called an expansion board, expansion card, or adapter card. It is a small circuit board that is installed in the expansion slots on the motherboard. You can install a particular adapter that connects a new device such as internal modem, sound card, and scanner.

**AGP (Accelerated Graphic Port) –** is a 32-bit, 66MHz external frequency data bus that transmit a maximum of 528MB/s of data (4 times the speed of PCI transmission); this design improves the speed of large amount in video transaction.

**BIOS (Basic Input /Output System) –** This is a chip on the motherboard that contains the instructions for starting up, or booting, the computer, and more.

**Bus –** Data that travels in a computer along the circuits on the motherboard are called buses. Although three main buses (data bus, address bus, and control bus) manage the computer's operation, often these are collectively called the bus. The bus carries instructions back and forth between the CPU and other devices in the system. ISA, EISA, VL-Bus, PCI and SCSI are examples of PC buses.

**bps –** Bits per second. Also often preceded by K (kilo/thousands), Kbps – Kilo bytes per second, and M (mega/million), Mbps – Mega bytes per second.

**Bus Mastering –** A method of transferring data through a bus in which the device takes over the bus and directly controls the transfer of data to the computer's memory. Bus mastering is a method of Direct Memory Access (DMA) transfer.

**Cache –** Cache RAM is an extra holding area for program instructions that need to be frequently used by the CPU or swapped in and out of RAM. Your CPU can usually access those instructions from the cache more quickly than it could from a hard disk or even RAM, so a cache helps the system work more efficiently. Most systems sold today offer either 256K or 512K cache.

**CPU (Central Processing Unit) –** executes all commands and controls the flow of data, providing the " brain " that enables the PC to calculate and perform the operations like sorting information more quickly than a human could. The CPU makes perhaps the greatest contribution to a PC's speed and power. Note: Any additional information is subject to change without prior revision from the supplier.

Table 1 -- CPU Speeds

| Processor type | Speed ratings (MHz) |
|---|---|
| 486DX2 | 66, 80 |
| 486DX4 | 75, 100, 120 |
| Pentium | 90, 100, 120, 133, 166, 200 |
| Pentium MMX | 166, 200, 233 |
| Pentium Pro | 166, 180, 200 |
| Pentium II | 233, 266, 300, 333 |

**EIDE (Enhanced IDE) –** It is a hard drive controller that enables your system to be able to handle fast hard disk drives at a speed of 10Mbps.

**EISA or MCA Bus –** Data is transmitted along 32 data lines to adapter cards designed specifically to work with the 32-bit buses. MCA expansion slots cannot accept 8-bit or 16-bit adapter cards. EISA stands for Extended Industry Standard Architecture, while MCA stands for MicroChannel Architecture. MCA is architecture used in IBM Microcomputer.

**Expansion slots –** Expansion slots are plug-in connectors that allow you to insert additional circuit boards that attach to the rest of the PC through special circuitry called the bus. By inserting the right circuit board -- usually called an adapter or an expansion card – you can increase the resolution and the number of colors used by the display, or you can transform your PC into a machine for recording and playing music.

**Fast SCSI –** The common nomenclature associated with SCSI-2, the second generation of SCSI offering mandatory parity checking improvements over SCSI-1.

**IDE (Integrated Drive Electronics) –** It was developed from ST-506 type hard drive interface, utilizes BIOS INT 13h hard drive secondary software and supports two hard drives (Master and Slave). Do not need extra software to drive since it is directly initiated in the BIOS. Data transfer rate is 4.1 Mbps. Take note that this interface cannot support other drive like CD-ROM drive.

**IEEE (Institute of Electrical and Electronic Engineers) –** It is an international professional society that issues its own standard, and is a member of ANSI and ISO. Popular known standards is:

**IEEE802.3** – is a physical layer standard for 10Base-T, 100Base-T, Ethernet, and StarLAN.
**IEEE802.5** – is a physical layer standard for Token Ring.
**IEEE802.11** – is a physical layer standard for Wireless LAN/WAN compatibility.
**IEEE802.12** – is a physical layer standard for 100VG AnyLAN.

**LAN (Local Area Network) –** A data communications network spanning a limited area. It provides communications between three or more computers and peripherals, in most cases using a high-speed media as it's backbone.

**Keyboard –** This is a component that comes in direct contact for you with your PC. The mechanism of keyboard converts a key cap's movement into a signal sent to the computer. The most common key mechanism are " capacitate " and " hard contact ". Capacitate keyboard has a spring that causes the plastic and the metal plunger to move nearer to two pads that have large plates (plated in tin, nickel, and copper). These pads are connected to the keyboard's printed circuit board. Hard contact keyboard causes the key cap to collapse a foam rubber dome that presses against a sheet of plastic on the bottom of which is metallic area connected to the rest of the keyboard's
circuit board.

**LDCM (LANDesk Client Manager) –** With the help of LDCM, PCs that are either stand-alone or on a network can not escape the control of a system administrator. Alerts will be sent to the user if an abnormal condition is encountered in a PC. It allows the administrator to give each PC a thorough check-up. Additionally, this feature is available to multiple OS's on the market today. LDCM Key Features include the following : ←Health Monitoring**,** ↑Real-Time Alerting**,** →Remote Accessibility**,** ↓Extensive Instrumentation. This is a product from Intel.

**Mouse –** The keyboard is a barrier to learn how to use a computer. Xerox Corporation first developed the concept of a pointing device, something a computer user could move with his or her hand, causing a corresponding move on screen. Because of its size and tail like cable, the device was named for the mouse. Apple Computer made the mouse a standard feature of its Macintosh computers, and with the popularity of Windows, a mouse is becoming standard equipment on all PCs, as well. The " Trackball " have survived more awkward methods of navigating with the keyboard. " Digitizing tablets " are popular with architects and engineers who must translate precise movements of a pen into lines on the screen. " Touch screens ", on which you press either your finger and a special light pen to control the software, are too tiring to use for any length of time.

**MMXÔ –** CPU's with MMX™ technology are optimized to run multimedia application, and therefore, offer faster multimedia playback than standard CPUs. However, when manufacturers introduce any new hardware technology, the software makers need to catch up. At this time of compilation, most applications can't yet take advantage of MMX™ capabilities.

**Parallel port –** Parallel ports (labeled LPT1, LPT2, and so on) are usually for plugging in printers. It is also often called a Centronics port – has been almost synonymous with printer port. Although a serial port can also be used to send data from a PC to some models of printers, the parallel port is faster. A serial port sends data one bit at a time over a single one-way wire; a parallel port can send several bits of data across eight parallel wires simultaneously. Take note that a serial connection sends a single bit, a parallel port send an entire byte. A parallel connection has one drawback.

**PCI Bus (Peripheral Component Interconnect) –** It is a connection slot in a motherboard that supports 32-bit bus transfer rates. The now standard PCI Local Bus carries data along at least 32 lines, that is, at least 32 bits at a time. Local bus computer designs add special buses so the CPU can communicate directly with key components like the monitor, resulting in much better performance. You should look for PCI

local bus capabilities in any system you buy, especially PCI local bus video (which helps the monitor display more quickly).

**POST (Power-On Self-Test) –** is the first thing your PC does when you turn it on, and it's your first warning of trouble with any of the components. When the POST detects an error from the display, memory, keyboard, or other basic components, it produces an error warning in the form of a message on your display and — in case your display is part of the problem — in the form of a series of beeps.

**RAM (Random Access Memory) –** consists of a bank of chips that act as " working memory ", holding program instructions and data only while your computer's on. Unless the instructions and data are saved to a disk, RAM forgets them when you turn your computer off. RAM is measured in megabytes (M). Most computers today come with 32M of RAM, though some sell with only 16M installed. There are a few different flavors and speeds of RAM, as well. One of the most prominent today is Extended Data Output ( EDO ) RAM, but an even faster type of RAM that has just hit the market is called SyncDRAM.

**Serial port –** Serial ports are also sometimes called COM (short for COMmunications) ports, and are labeled COM1, COM2, and so on. It is simple in concept: one line to send data, another line to receive data, and a few other lines to regulate how data is sent over the other two lines – from commonplace modems and printers to plotters and burglar alarms. The most common use for serial port is with a mouse or modem. The reason for this is that a serial port is not a very efficient way to transfer data, so little data that speed is not crucial, and perfect for modems because. With current technology, phone lines cannot transport more than one signal at a time anyway. The serial port is often referred to as an RS-232 port.

**SCSI (Small Computer System Interface) –** An intelligent bus for transmitting data commands between a variety of devices. There are many implementations of SCSI, including Fast SCSI, Wide SCSI, Fast Wide SCSI, Fast-20, and Fast-40.

**SCSI-2 –** The second generation of SCSI; includes many improvements to SCSI-1, including Fast SCSI, Wide SCSI, and mandatory parity checking.

**SCSI-3 –** The third generation of SCSI; introduces Fast-20 and Fast-40 as improvements to the parallel bus. The standard also includes a number of specifications for high-speed serial bus architectures such as SSA, Fiber Channel, and IEEE 1394. Also known as Ultra SCSI.

**Ultra SCSI –** Also known as SCSI-3, is a third generation SCSI standard that introduced parallel bus speed improvements (FAST-20 and FAST-40), an the miniaturized 68-pin micro connector.

**USB (Universal Serial Bus) –** USB consolidates serial, parallel, keyboard, mouse, and game ports into one asynchronous and isochronous communications port with bandwidth for data transfer speeds up to 12 Mbps without termination. By daisy-chaining USB hubs, up to 127 I/O devices can be connected to one USB port on the PC. USB is completely plug-and play meaning peripherals can be correctly detected and configured automatically as soon as they are connected.
UTP (Unshielded Twisted Pair) – Twisted pair cable with neither individual nor overall shielding. Twisted Pair are two wires twisted together to reduce susceptibility to RF crosswalk.

**VGA (Video Graphics Array) –** A video adapter that supports 640x480 pixels color resolution. The Windows OS provides medium text & graphics standard.

**VL-Bus –** It is also known as Local Bus; this is an I/O interface that is directly connected and depended of the system CPU. The VL-Bus is an abbreviation of VESA Local Bus.