Panel PC

LP 1500

(MB: **PC805/PC806**,
System Chipset: **Intel 852GM**)

**15" Intel Ultra low-power Celeron/Pentium M
Multimedia panel PC with Versatile Mounting Design**

Service Manual (Version 2708)

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation

Unpacking

After unpacking the **LP 1500** carton, check and see if the following items are included and in good condition.

◆ **LP 1500 main system**   x 1
◆ Accessories
 - LP 1500 main system   x 1
 - Power cord (90°)   x 1
 - User's manual & drivers CD   x 1
  (for touchscreen drivers, please download the updated drivers from the following website
  http://www.elotouch.com or
  http://www.eeti.com.tw or
 - Base knob with rubber bumper x 1
 - Panel mounting kit (optional)   x 1 set
 - Lag screws   x 4

Make sure that all of the items listed above are present. If any of the above items is missing, contact your dealer immediately.

Warranty

All products produced by the Manufacturer. are warranted against defective materials and workmanship for one year starting from the date of delivery to the original purchaser. However, this warranty does not apply to: (1) damage caused by accident, abuse, misuse, misapplication, (2) the product or part has been modified, (3) the product serial number or warranty label has been removed or defaced.

Important Safety Precautions

Before getting started, read these instructions and save them for later reference.

1. To access any internal components of the system, confirm the system power is turned off and make sure all the system fans already stop turning.
2. Turn off the computer before cleaning. Clean with a damp or dry cloth only. Do not spray any liquid cleaner on screen.
3. The power socket used to plug in the power cord must be located near the system and easily accessible. Do not use outlets on the same circuit of the systems that regularly switched on and off.
4. Make sure the voltage of the power source is correct before connecting the system to the power outlet.
5. If the system is sharing an extension cord with other devices, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating.
6. Do not expose the power cord, power outlet and extension cord to moisture.
7. Install the system on a reliable surface to prevent damage caused by dropping.
8. Disconnect the power cord from the system before any installation. Make sure both the system and the external devices are turned off. The sudden surge of power may ruin any sensitive components.   Also make sure the system is properly grounded.
9. During installation of any internal components, be sure to ground yourself to keep from any static charge. Most electronic components are sensitive to the static electric charge. Use a grounding wrist strap and place all electronic components in any static-shielded devices.
10. The openings on the system cabinet are for the cabin ventilation to prevent the system from overheating. DO NOT COVER THE OPENINGS.
11. The brightness of the flat panel display will decrease with use. However, hours of use will vary depending on the application environment.
12. Avoid using sharp objects to operate the touch panel. Scratches on the touch panel may cause mal-calibration or non-function to the touch panel.
13. The LCD panel display is not subject to shock or vibration. When assembling the computer, make sure it is securely installed.

Table of Contents

1. INTRODUCTION

This chapter provides background information and detail specification on the LP 1500 . Sections in this chapter include:

◆ General Information
◆ What covers in this Manual
◆ Specification
◆ Dimension

1.1. General Information

The information revolution which started from the mid '90 inaugurated a new competitive era where consumer- computing technology was exploited to business operation quicker than ever before. Many enterprises from our life related industries such as **POS**, **POI**, **KIOSK**, **Banking**, **Medical** to the high-tech **Telecom**, **Aerospace**, **Semiconductor** … etc. all are eager or forced to automate their industries with PCs in order to thrive in this new age. For their industrial automation, there is one thing in common, i.e. space is always a premium and system stability is always a must in their environmental applications.

Slim and compact, the **LP 1500** is a 15.0" TFT Intel Celeron/Pentium M multimedia panel PC system. Only 89 mm in thickness, the LP 1500 is specially designed for space-constricted environment. With either an Intel ultra low-power Celeron or Pentium M CPU as its central processor, the LP 1500 is a noiseless panel PC designed for high performance multimedia application while noise is extremely concerned.

Featuring with versatile mounting design for different environmental applications, the LP 1500 itself can be used as a ready-to-play system by connecting to necessary peripherals. It also provides one set of VESA holes for market-available swing arms for mobile application.

The **LP 1500's** lustrous outlook and slim profile along with its noiseless design make it unsurpassed in any environment where space is a premium and serenity is a must.

1.2. What Covers in this Manual

This handbook contains most information you need to set up and use the LP 1500 system. Only service technicians are allowed to open the system for service. You do not need to read everything in this handbook to use the system.

For a quick start, see the following chapter summaries;

Chapter 1 (the current chapter) provides background information and detail specification on the LP 1500 .

Chapter 2 identifies the LP 1500 system exterior components and provides instructions to help you to use the system as soon as possible.

Chapter 3 provides the procedures to connect external devices to the I/O interface

Chapter 4 helps you to recognize the LP 1500 system internal components. It also provides the installation procedures including LCD, touchscreen, power supply module, CPU, system memory, FDD, HDD and CD-ROM drive.

Chapter 5 provides detail information of the jumper settings and connector signals of the system control board.

Chapter 6 explains the AWARD BIOS setup.

Chapter 7 introduces the Ethernet, XGA, audio & touchscreen drivers.

Appendix A details the 15.0" LCD specifications.

Appendix B describes the system IO port address

Appendix C introduces the Wake-On-LAN feature.

Appendix D explains the first MB memory map.

Appendix E provides the specifications for the built-in power supply.

1.3. Specifications

LP 1500: 15.0" TFT Intel® low-power Celeron/Pentium M Multimedia Panel PC with Versatile Mounting design

System

- **CPU**
  - ○ LP 1500 M: Socket 478 Pentium M up to 1.8GHz
  - ○ LP 1500 F: Onboard Celeron M 900MHz up to 1GHz
- **L2 Cache:** CPU built-in
- **System Chipset:** I852GM/ICH4
- **System Memory:** 2 x 184 pin DDR socket supporting DDR up to 2GB
- **Display:**
  - ○ 15.0" color TFT, 1024 x 768
  - ○ Share memory architecture able to utilize the display memory up to 64MB
- **Standard I/O**
  - ○ Serial ports x 4, COM 1, 2 & 4 with +5V/12V power output on pin 9;
    3 x RS-232, 1 x RS-232/422/485,
    COM 3 is internal type reserved for touchscreen
  - ○ Parallel port x 1 SPP/EPP/ECP
  - ○ PS/2 keyboard interface x 1
  - ○ PS/2 mouse interface x 1
  - ○ DIO: Input x 2, output x 2
  - ○ USB interface x 4
  - ○ VGA interface x 1
  - ○ Brightness VR x 1
- **Audio**
  - ○ Speaker x 2
  - ○ MIC-in/speaker-out
- **Ethernet**
  - ○ 100/10 Base-T PnP Ethernet with RJ-45
  - ○ Supports Wake-on-LAN
- **2nd Display**
  - ○ DB15, VGA port
  - ○ Max resolution up to 1920 x 1200, true color
- **Front Bezel**
  - ○ LED indicators for HDD, LAN, POWER
  - ○ IrDA sensor (optional)
- **Power Supply**:
  90W, 100~240V, 1.2A @50~60Hz

Peripheral & Storage Devices

- **Touchscreen:** 15.0 resistive type or surface wave type (SAW)
- **Drive Bay**
  - o 2.5" HDD x 1
  - o Slim CD-ROM or equivalent device x 1
  - o CompactFlash x 1
  - o Mini PCI slot x 1

Mechanical/Environmental

- **Construction**
  - o Inside: Heavy-duty steel
  - o Outside: Fire-proof resilient plastic
- **Dimension** (W x H x D):
  406 x 355 x 85 mm
- **Mounting:** Wall mount & VESA mount
- **Versatile Stand**: 3-stage standing

Optional Device

- **Scanner and MSR**
- **Media card reader**

- *Specifications are subject to change without notice.*

1.4. Dimensions

1.4.1. LP 1500
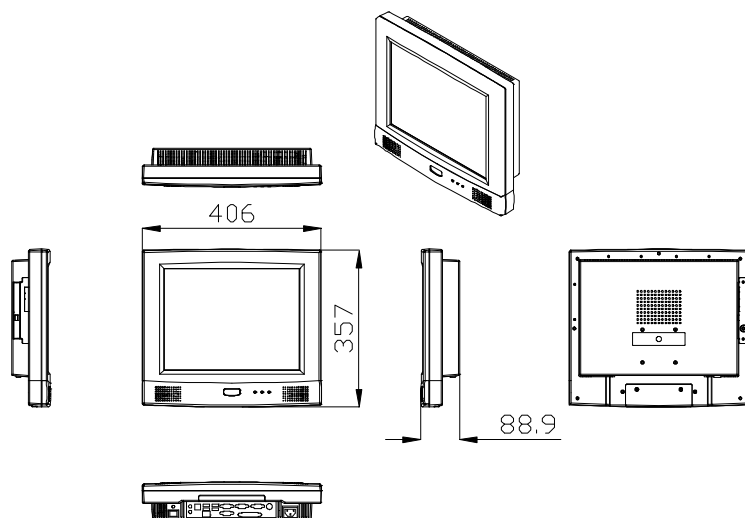
F<small>IGURE</small> 1-1: LP 1500 D<small>IMENSION</small>

2. USING THE SYSTEM

◆ Identifying the LP 1500 system
◆ System setup for the first-time use

2.1. Identifying the System

Before getting started, take a moment to familiarize yourself with the system and the I/O arrangement of the LP 1500.

2.1.1. Front View

When the LP 1500 is put upright on the desktop with the provided pedestal, its front view appears as below.

CD-ROM drive &
PCMCIA outlet

15.0" LCD &
touchscreen

Speaker

IrDA Sensor
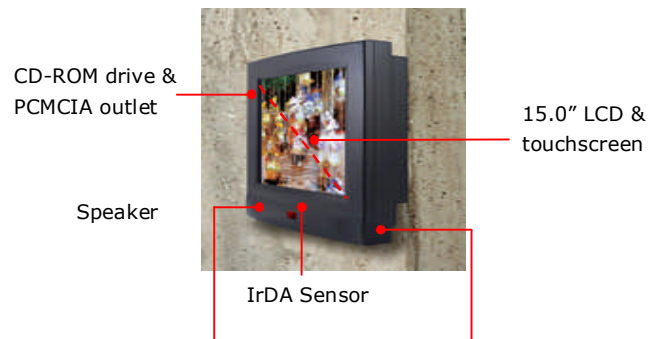
2.1.2. I/O Outlets

When you turn around the LP 1500 system, you will find the power switch and all the I/O ports are located at the bottom side of the panel PC.
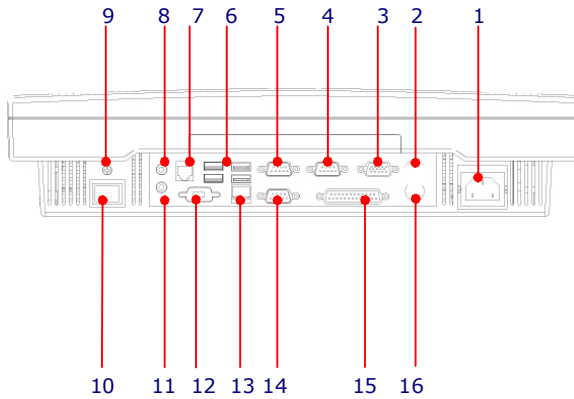
1. A/C INLET
2. PS/2 KEYBOARD
3. VGA PORT

4. COM 1
5. COM 2
6. USB*4

7. 2-CHANNEL DIO
8. MIC-IN
9. VR BRIGHTNESS

10. POWER SWITCH
11. SPEAKER OUT
12. DVR (OPTIONAL)

13. ETHERNET (RJ-45)
14. COM 4
15. PRINTER PORT

16. PS/2 MOUSE

2.2. System Setup for the First-time Use

To set up the LP 1500 for the first-time use, you should have the following items ready. The items are either in the accessory box or available in any computer stores.

◆ 110V or 220V power cord

◆ USB keyboard

◆ USB mouse

2.2.1. Installation Procedures

The LP 1500 system can be powered by an AC electrical outlet (100~240V, 1.3A~0.7A @47~63Hz). If the system is to be powered up by AC power, be sure to use the right power cord (110V or 220V) for connection.

1. Connect the 3-pin female end of the power cord to the AC inlet located at the right bottom side of the panel PC.

2. Connect the 3-pin male end of the power cord to an electrical outlet.

3. Connect a USB keyboard and a USB mouse to the USB ports located at the bottom side of the panel PC.

4. Power on the system by switching the power switch located at the bottom side of the panel PC.

2.2.2. Running the BIOS Setup

If you are a commercial user, the LP 1500 should have been properly set up and configured by your dealer. You may still find it necessary to change the system configuration information. In this case, you need to run the system's BIOS setup program.

Under the following conditions, the CMOS settings are to be changed.

1. The system is starting for the first time.

2. The hardware devices attached to the LP 1500 system have been changed.

3. The CMOS memory has lost power and the configuration information has been erased.

The BIOS setup program is stored in ROM, which can be accessed by pressing <DEL> key on the keyboard immediately when the system is powered on.

In order to retain the specified setup information when the system power is turned off, the system setup information is stored in a battery-backed CMOS RAM. The battery is to ensure the settings will not be erased when the computer is turned off or reset. When the computer is powered on again, the system will read the settings stored in the CMOS RAM and compare them to the equipment check conducted during the power on self-test (POST). If any error or mismatch occurs, an error message will be shown on the screen and the computer will be prompted to run the setup program.

To change the BIOS setup, please refer to Chapter 7 for more information.

2.2.3. Operating System and Driver Installation

The LP 1500 system is not equipped with an operating system when delivered from the original manufacturer. If you are a commercial user, the system is likely to have been pre-installed proper operating system and software drivers by your dealer or system integrator.

If the system is not pre-installed with any system OS and drivers or you intend to install your preferred ones, there are several ways to load OS and software into the system.

1. Via the CD-ROM

2. Via an USB data-retrieval devices

3. Via Ethernet: You can boot up the system via Ethernet bootrom (optional) and download system OS or software from the network.

Recent releases of operating systems always include setup programs that load automatically and guide you through the installation. You can also refer to your OS user manual for instructions on formatting or partitioning the hard disk drive before any software installation.

The LP 1500 system provides the following utility drivers stored in the CD-ROM diskette or utilities diskettes;

- ✧ Ethernet utilities
- ✧ VGA utilities
- ✧ Main chipset drivers
- ✧ Audio drivers
- ✧ Touchscreen drivers

3. I/O CONNECTION

This chapter describes the LP 1500 system I/O ports and how to use the I/O interface to connect to external devices.

The I/O interfaces located at the rear side of the chassis are used to connect external peripheral devices, such as a mouse, a keyboard, a monitor, serial devices or parallel printer…etc.   Before any connection, make sure that the computer and the peripheral devices are turned off.
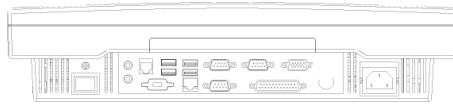
FIGURE 4-1

3.1. Parallel Port

The LP 1500 can support the latest EPP and ECP parallel port protocols. It can be used to connect to a wide array of printers, ZIP drive, parallel scanner and any other parallel devices. The printer interface on the LP 1500 is a 25-pin female D-SUB connector. To connect any parallel device, follow the steps below:

1. Turn off the system and the parallel devices.
2. Plug in the male connector of the parallel device to the 25-pin female D-SUB connector and fasten the retaining screws.
3. Turn on the system and the attached parallel devices.
4. Refer to the parallel device's manual for instruction to configure the operation environment to recognize the new attached devices.
5. You may need to run the CMOS setup to change the hardware device setup.

3.2. COM Ports x 4

The LP 1500 features with four onboard COM ports. COM 1, 2 & 4 are D-SUB serial ports located at the rear side of the chassis, ready to connect to a wide range of serial devices. COM 3 is internal serial port reserved for touchscreen for internal connection. COM1, COM3 and COM4 are RS-232 and COM2 is RS-232/422/485, selected via BIOS setting.

COM 1, 2 & 4 are equipped with +5V/+12V power capabilities on pin 9, providing easy accommodation to a broad range of serial devices.

The COM port 5V/12 power is selected via jumper setting on the IO board, IO-005. Please refer to SEC. 6.2.1.1 for 5V/12 power selection.

If a touchscreen module is installed, for factory default setting, its controller will occupy COM3.

COM1, 2 & COM4 are all D-SUB 9-pin connectors. To connect to any serial device; follow the procedures below;

1. Turn off the LP 1500 system and the serial devices.

2. Attach the interface cable of the serial device to the 9-pin D-SUB serial connector. Be sure to fasten the retaining screws.

3. Turn on the computer and the attached serial devices.

4. Refer to the serial device's manual for instruction to configure the operation environment to recognize the new attached devices.

5. If the serial device needs specified IRQ or address, you may need to run the CMOS setup to change the hardware device setup.

If the COM2 is to be set to RS-422/485 for long distance transmission, make sure the COM2 setting on the BIOS "Integrated Peripheral" is properly set.

3.3. 100/10 Base-T Ethernet (RJ-45)

The LP 1500 provides a 100/10 Base-T NE2000 compatible Ethernet (RJ-45) interface. For network connection, follow the instructions below.

1. Turn of the LP 1500 system and the Ethernet hubs.

2. Plug in one end of cable of a 100/10 Base-T hub to the system's RJ-45 phone jack. The pin assignment of the RJ-45 is listed as follow;
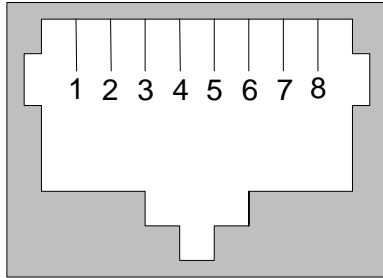
RJ-45

RJ-45 Connector Pin Assignment

Pin	Description
1	Tx+ (data transmission positive)
2	Tx- (data transmission negative)
3	Rx+ (data reception positive)
6	Rx- (data reception negative)
others	No use

3.4. VGA Interface

The LP 1500 has a 15-pin analog RGB connector located at the rear side of the chassis. It can support its own LCD display and an expansion CRT or analog monitor at the same time. The connection to an analog monitor is an easy plug-in of the VGA D-SUB 15-pin connector to the RGB interface.

3.5. VR Brightness Control

The LP 1500 system provides a VR control to adjust the brightness of the LCD. The VR control is with a "+" shape cutout on it. You will need a "+" shape screwdriver to adjust it for display brightness control.

3.6. DIO (Digital Input & Output)

The LP 1500 provides 2-channel digital input and output that can be used for the system's simple automation control needs. The digital I/O can be configured to control the opening of a cash drawer or to sense the warning signal of an uninterrupted power system (UPS) or to do the store security control.

The DIO port address and pin definition is listed below;

I/O Port address: 200H/208H By CMOS Setting

    Read: SD0, SD1

    Write: SD4, SD5
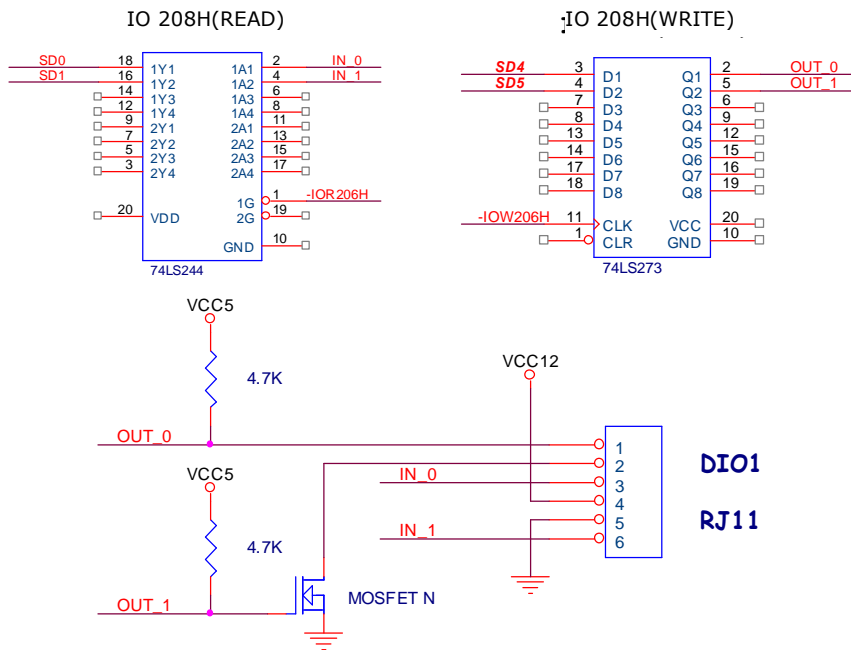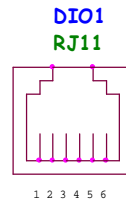
The Digital I/O is of TTL interface.   It is controlled via software programming.

Digital I/O Programming

Input/output address: 208H

In_Data 0~3=SD0~SD1

Out_Data 0~3 SD4~SD7

EXAMPLE:

```
10   REM Digital I/O example program
20   X = INP (&H208)      REM INPUT Digital I/O port
                          for 4 bit
30   X = OUT (&H208)      REM OUTPUT Digital I/O port
     ⋮                    for 4 bit
60   END
100 Return
```

Port 208H Definition

3.7. Audio Interface (MIC-in, SPK-out)

The audio interface contains two jacks, microphone-in, and speaker-out.

The microphone-in jack is used to record sound or voice by connecting to an external microphone. The speaker-out jack is to output the audio to external devices such as speakers or earphones. The audio device can be directly attached to the jacks. Please note that the audio driver has to be installed first before using any audio device.

3.8. USB Ports

The LP 1500 also provides four USB ports to connect to external USB devices. A simple plug-in of the USB device interface cable to the USB port will make the connection. Before using the USB devices, remember to install the device driver first.

3.9. IrDA Sensor (optional)

The LP 1500 features with an optional IrDA sensor located at the front bezel. To use the system with IrDA device, the '"COM2" on the "Integrated Peripheral" in the BIOS setting needs to be set to "IrDA". The system's IrDA sensor and the device's IrDA sensor have to face each other at the same horizontal level and the distance of the IrDA transceiver and receiver should not exceed 1 meter.

3.10. AC/DC Inlet/Power Switch

For LP 1500 AC system, it can operate in the input range from 100~240 volts, 50~60 Hz.

4. HARDWARE INSTALLATION AND UPGRADE

This chapter overviews the installation of the ARTEMINS's internal components and devices. This chapter is for service engineers not for the end user. Sections include:

◆   The exploded diagram
◆   Motherboard assembly
◆   Toucscreen controller assembly
◆   LCD module assembly
◆   Front bezel assembly
◆   HDD module assembly
◆   CD-ROM/FDD assembly
◆   Power module assembly

The LP 1500 consists of an Intel low-power Pentium® M multimedia motherboard with an adequate CPU and relevant DDR on it. The system control board and other internal devices such as HDD, CD-ROM and power supply are already housed in a plastic rear cover. The system's performance depends on the installed CPU and the capacity of the system memory and hard disk drive. In some circumstances, you might intend to upgrade or maintain the system. By removing the rear cover and the metal covers, the internal components such as CPU, DDR, HDD, CD-ROM and power supply can be easily accessed for maintenance and upgrade.

The LP 1500 is composed of 10 major modules. The installation procedure is also listed as below.

1. Front bezel module
2. LCD module
3. Motherboard module
4. Invertor module
5. Power supply module
6. Touchscreen controller module
7. HDD module
8. CD-ROM/FDD module
9. Back cover module
10. Stand module

To disassemble the system module for maintenance, the procedure is from step 10 to 1.

4.1. Recognizing the System Major Parts

The following diagrams highlight the steps that make up the LP 1500 main system.
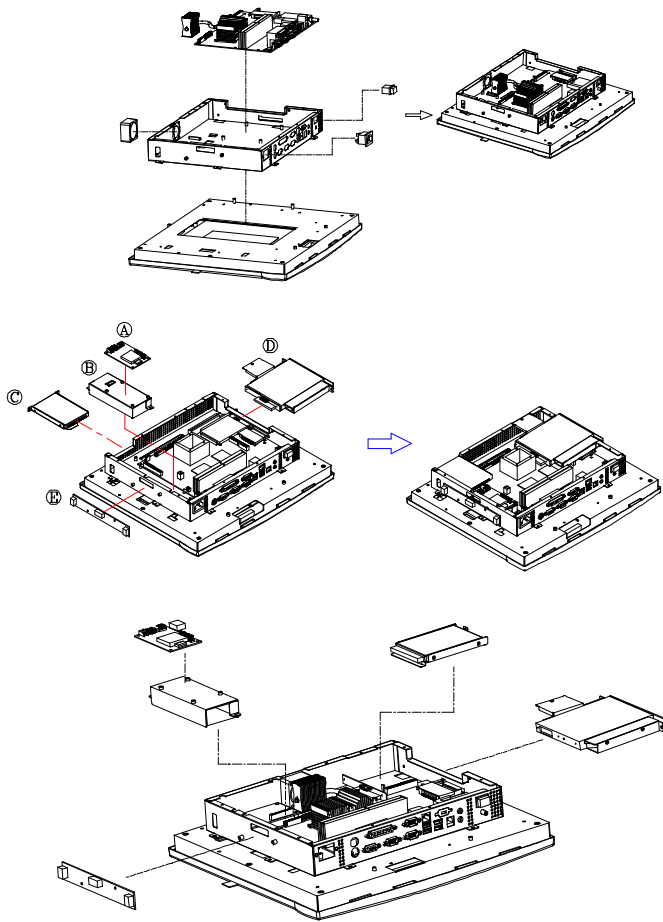
FIGURE 5-1: LP 1500 INTEGRATION

4.2. Touchscreen & Front Bezel Assembly

The LP 1500 is able to accommodate Elo analog resistive or Intelli (SAW) touchscreen. PLEASE NOTE THAT WHEN DIFFERENT TOUCH MODULE IS INSTALLED, DIFFERENT TOUCHSCREEN METAL BRACKETS ARE NEEDED. YOU CANNOT REPLACE ONE TYPE OF TOUCH PANEL WITH THE OTHER WITHOUT CHANGING THE TOUCHSCREEN METAL BRACKETS USED TO HOLD THE TOUCH PANEL TO THE FRONT BEZEL.

The following steps illustrate the ways to integrate the IrDA/LED board, speakers and toucshcreen to the front bezel. Refer to Fig. 5-2.

1. Fix the IR/LED board (C) to the front bezel (A) with two PMS M3*6 screws.

2. The two speakers (B) are to be fixed to the right and left sides of the IR/LED board with four screws for each. The speaker wires are to be connected to the 2-pin SPKL1 and SPKR1 on the IR/LED board.

3. Plug one end of the 2*9 IR/LED cable to the IR/LED board.

4. There are 4 one-side adhesive rubber strips. Attached the 4 rubbers to the front bezel. The 4 rubbers act as bumpers to absorb the pressure when the touchscreen is fixed to the front bezel.

5. There are 4 metal brackets (E) used to fix the touchscreen to the front bezel. The metal brackets have to be taped with foam sponge strips.

6. Then, fix the touchscreen (D) to the front bezel (A) with the 4 metal brackets (E) with two PMS M3*6 screws for each. The foam sponges are used to absorb the pressure caused by the four metal brackets when driven tightly to the touchscreen.
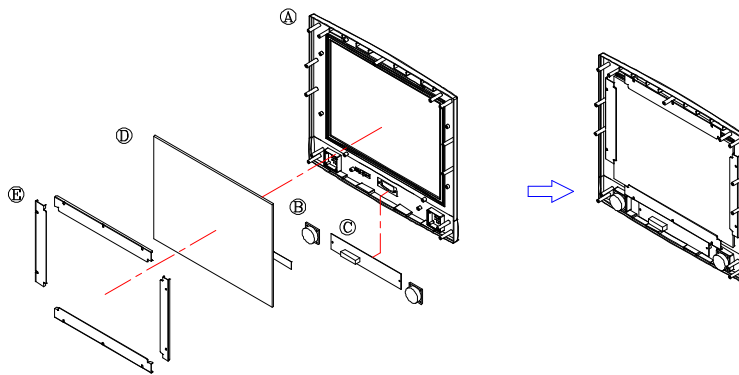
FIGURE 5-2: LP 1500 FRONT BEZEL MODULE ASSEMBLY

4.3. LCD Module Assembly

The LCD does not fix to the main system directly. Rather, it is to be fixed to a LCD holder, then to the main system.

Refer to Figure 5-3. The standard LCD used in LP 1500 is 15.0" 24-bit LVDS CHI MEI M150X4-L06 or its equivalent.

1. There are two LCD brackets (B) used to fix to the LCD panel to the LCD holder (A) from the left & right sides. Fix the LCD brackets to the LCD panel with four FMS M2.5*3 screws at each side.

2. Fix the LCD panel module (C) to the LCD holder (A) with four PMS M3*6 screws.

3. The LP 1500 LVDS cable is a 35 cm DF19-20 to DF11-30 (2*15) cable. Insert the DF19-20 end into the opening at the rear side of the LCD holder and have it firmly plugged to the DF19-20 connector on the LCD panel. The other end is for later connection to the LCD1 on the motherboard.

4. Insert the IR/LED cable with one end already on the IR/LED board through the gap between the LCD panel and the LCD holder. Make sure the other end of the cable comes out from the opening on the LCD holder.
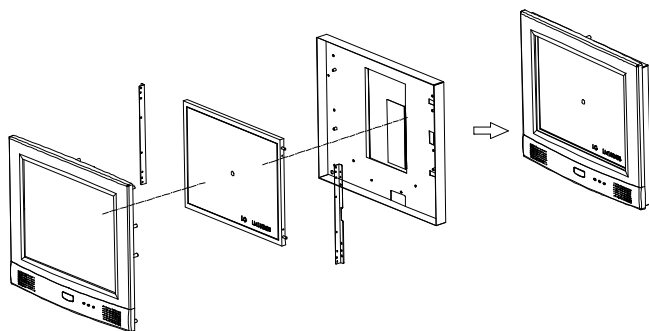
FIGURE 5-3: **LP 1500** LCD MODULE ASSEMBLY

After finishing the LCD module installation, the module is to be integrated to the front bezel module.

1. Use air blower to blow any dust between the LCD and touchscreen before the two modules are integrated together.
2. The touchscreen 5-pin flat cable should go upwards through the rectangle opening at the left side of the LCD holder.
3. Retain the LCD module to the front bezel module with six PMS M3*8 screws.

4.4. System Chassis Assembly

4.4.1. Installing the CPU

The LP 1500 can adapt Intel® Pentium M CPU from 1.3 up to 1.8GHz. Upgrading the CPU can increase the system performance.

The LP 1500's motherboard provides one 479-pin ZIF socket. The CPU must come with a CPU fan with a heat sink on to avoid overheating.

To install a CPU or upgrade a new CPU, follow the instructions below.

1. If there is an existing CPU on the socket, remove the CPU cooling fan first. Then remove the CPU by pulling the lever out a little and raising it, then lifting out the existing CPU from the socket.

2. To insert the CPU into the socket, the notch on the corner of the CPU (the corner with golden dot) should point toward the end of the socket lever. If the insertion of the CPU to the socket is not easy, check whether the CPU pins correspond with the holes on the socket.

3. After inserting the CPU into the socket, pull the lever down to make sure the CPU is in place.

4. The CPU cooling fan comes with a 3-pin power wire. Connect the power wire to the 3-pin power connector, FAN2 on the motherboard. Tie the power wires together with a nylon cable tie.

5. There are two silver clips on the CPU socket. Make sure the cooling CPU fan clips click into place.
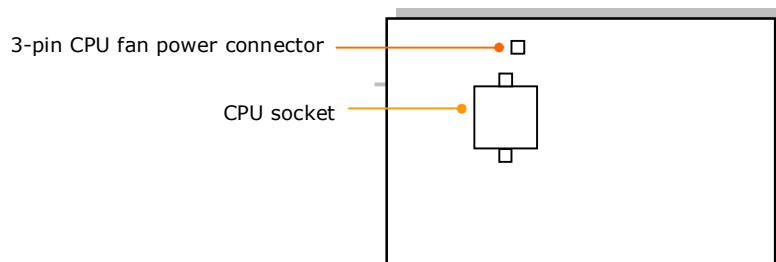
FIGURE 5-4

4.4.2. Installing the DDR Memory Module

The LP 1500 system control board provides 2 x 184-pin DDR socket, able to support DDR memory from 128MB up to 1GB. To install the memory module, follow the instructions below.

1. Find the 184 pin DDR socket on the motherboard

2. There are two white eject levers at each end of the DDR socket. Push them outward until they separate from the two vertical posts.

3. Holding the memory module with the notch on the upper right corner, then insert the memory module into the DDR socket at 90° angle.

4. Push the two eject levers toward the vertical posts until they click into place. The memory module is now upright.

5. Retain the memory module to the DDR socket by firmly fastening the DDR and the eject levers together with nylon cable ties.

The system is able to auto detect the new memory size and there is no need to change the system configuration after installation.

Make sure that the memory module you are using can handle the specified DDR MHz. Inadequate memory module will make the computer unable to boot up.

4.4.3. Motherboard Assembly

The motherboard is the first component to be assembled to the system compartment. Follow the steps below to assemble the motherboard to the system chassis. Make sure the CPU with cooling fan and DDR are already properly installed to the motherboard before the motherboard is attached to the system chassis.

1. Refer to Figure 5-5. There is a cutout at the left upper side of the chassis. The I/O outlets are at the bottom side of the chassis. Make sure the I/O side of the chassis near you.

2. Tape the motherboard insulator to the motherboard first. The insulator is to separate the electronic components on the reverse side of the motherboard from the metal compartment to prevent short circuitry caused during system operation.

3. Insert the motherboard to the chassis and make sure all the I/O connectors on the motherboard perfectly fit into the I/O outlets at the bottom side of the chassis.

4. Retain the motherboard to the chassis with eight PMS M3*6 screws.

5. Insert the power switch (C) to the small rectangle opening at the right bottom side of the chassis. The other end of the switch cable is to be connected to the 2-pin POWER ON switch, CN3 on the motherboard.

6. Insert the 3-pin AC inlet (D) to the small rectangle opening at the right bottom side of the chassis.
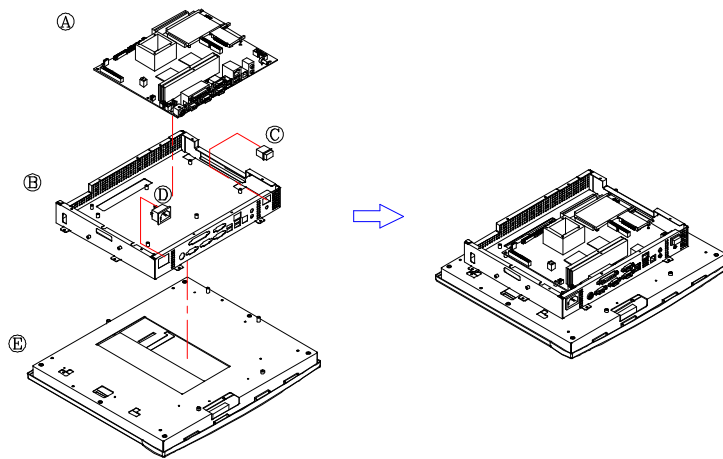
FIGURE 5-5: LP 1500 MOTHERBOARD ASSEMBLY

7. Make sure the other ends of the LCD cable and IR/LED cables come out from the small rectangle opening the bottom side of the chassis.

8. Insert the touchscreen 5-pin flat cable to the chassis from the small opening at the left side of the chassis.

9. Retain the chassis to front bezel module with six PMS M3*6 screws.

10. Connect the DF11-30 end of the LCD cable to the LCD1 connector on the motherboard.

11. Connect the 2*13 box end of the IR/LED cable to the motherboard's CN1, the IrDA/speaker/LED connector Connector.

SPECIAL ATTENTION NEEDS TO BE PAID WHEN PLUGGING THE LCD CABLE TO THE LCD HEADER CONNECTOR ON THE MOTHERBOARD. MAKE SURE PIN 1 OF THE ONBOARD LVDS CONNECTOR MATCH PIN 1 OF THE CABLE. ANY WRONG PLUGGING OR SHIFTED PLUGGING WILL DAMAGE THE LCD PANEL OR LEAD TO MAL-FUNCTION.

4.4.4.Invertor Assembly

The invertor provides necessary power source to drive the LCD panel. It is to be integrated to the right side of the chassis.

1. Attach the aluminum foil insulator to the invertor. The insulator is to separate the electronic components on invertor from the metal compartment to prevent any possible short circuitry caused during system operation.

2. The invertor cable is a 7-pin to 4-pin cable with wafer connectors at both sides. Connect the 7-pin end to the invertor first. Insert the 4-pin end to the chassis from the small opening at the left side of the chassis and have it firmly connected to the INV1 on the motherboard.

3. Fix the invertor module to left side of the chassis with two PMS M3*8 screws as shown on Figure 5-6 (E).

4. Connect the pink-white high voltage wires from the LCD panel to the invertor.
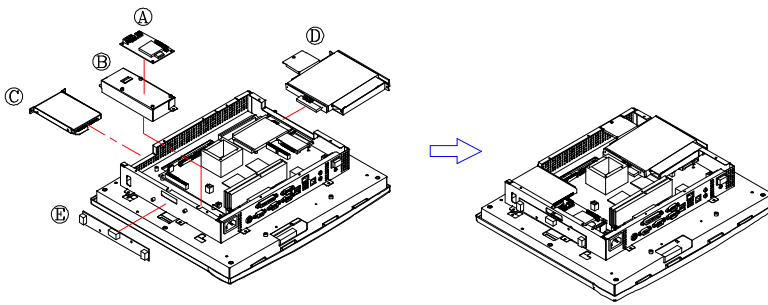
FIGURE 5-6: PERIPHERAL MODULE ASSEMBLY

4.4.5.Power Module Assembly

The power supply is to be integrated with a power bracket before it is installed to the panel PC system. Figure 5-6 shows the steps to assemble the ATX power module. For the specification of the power supply, please refer to APPENDIX.

1. Refer to Figure 5-7. Insert the power supply (A) to power bracket (B) and fix them together with four FMS M3*5 screws.

2. Plug the ATX power cable to the ATX power connector, ATXP1 on the motherboard.

3. Integrate the power module to the system chassis and retain them together with two PMS M3*6 screws as shown on Figure 5-6 (B).

4. Connect the three power wires from the power supply to the AC inlet.
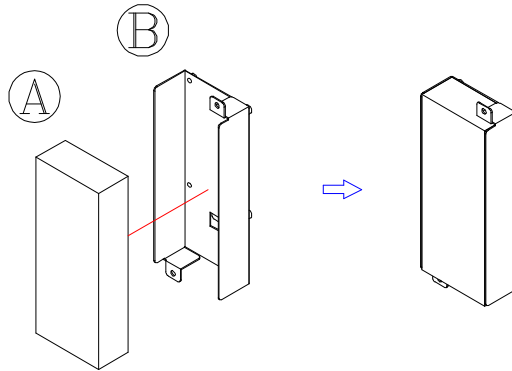
FIGURE 5-7: POWER MODULE ASSEMBLY

4.4.6.Touch Controller Assembly

If a touchscreen is integrated with the system, the touchscreen controller is to be installed right after the installation of the power supply module.

1. Fix the touchscreen controller to the top of the power supply bracket with four PMS M3*6 screws as shown on Figure 5-6 (A).

2. For Elo touch, the touchscreen cable is a 2*5-pin to 2*5-pin flat cable. One end is connected to P3 on the touchscreen controller first. Connect the other end to COM3 on the motherboard.

3. Connect the 5-pin touchscreen flat cable from the touchscreen to P4 on the touchcreen controller.

4. There is a 2-pin (black & red) power wire to provide the power source for the touchscreen. Connect one end to P2 on the controller with the other need connected to CN4 on the motherboard.

5. Fold these cables properly.

4.4.7. HDD Module Assembly

The LP 1500 provides enough space to build in a 2.5" hard disk drive in the system compartment.

The following steps show the way to install an internal hard disk drive.

1. Refer to Figure 5-8. Fix the hard disk drive (1) to the HDD bracket (3) with four FMS M 3*5 screw.

2. Connect the one end of the 44-pin IDE ribbon cable (2) to hard disk drive with the other end connected to the IDE 1 on the motherboard.

3. Retain the HDD module to the chassis with two FMS M3*4 screws as shown on Figure 5-6 (B).
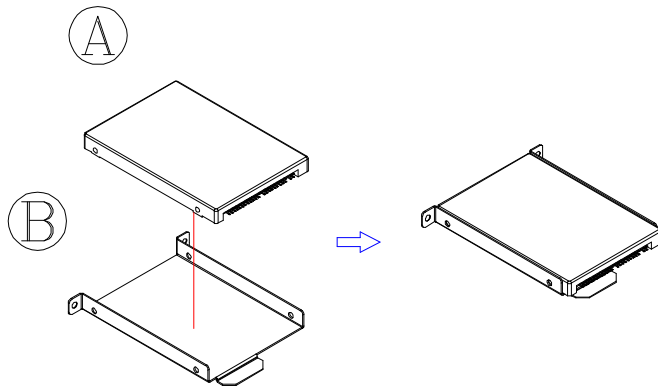
FIGURE 5-8: HDD ASSEMBLY

4.4.8. Slim CD-ROM Device Assembly

The LP 1500 provides enough space to accommodate a slim CD-ROM device or its equivalent. The following steps show the ways to install a slim CD-Rom device.

1. Refer to Figure 5-9. Attach the CD-ROM board (B) to the slim CD-ROM (A) and fix them together with two screws.

2. There is a small metal bracket (C) used to firmly fix the CD-ROM device to the CD-ROM bracket. This small bracket is to prevent the device from moving when installed to the CD-ROM bracket.

4. Insert the CD-ROM module with the small bracket already on to the CD-ROM bracket (D) and fix them together with two screws as shown on Figure 5-6 (D).

3. There is a 44-pin CD-ROM ribbon cable. Connect one end to the CD-ROM board with the other end connected to the IDE2 on the motherboard.

4. There is a 4-pin CD audio-in wire to be plugged to CD1 on the motherboard. Connect the other end of the CD-audio wire to the 4-pin black pin connector on the CD-ROM board.

5. Insert the CD-ROM module to the chassis and fix them together with three FMS M3*4 screws as shown on Figure 5-6 (D).
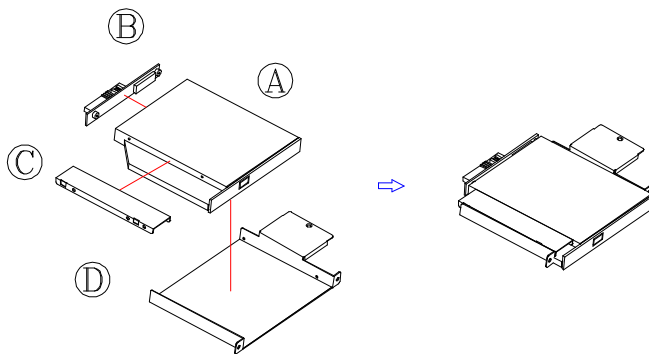
FIGURE 5-9: SLIM CD-ROM ASSEMBLY

4.5. Back Cover Assembly

The back cover is the last module to be integrated to the LP 1500 main system. Refer to Fig. 5-10.

1. Fix the VESA bracket (A) to the system chassis with four FMS M3*4 screws.

2. Retain the plastic back cover (B) to the system with seven PMS M3*8 screws.

3. Fix the small plastic cover (C) to the chassis with two TMS M3*4 screws. This cover is used to cover the IR/LED board to prevent if from exposure.

4. Retain the expansion bracket (D) to the right side of the chassis and fix them together with tow FMS M3*4 screws. This bracket is used cover the PCMCIA and mini PCI outlet if no PCMCIA device or mini PCI module is to be used with the system.
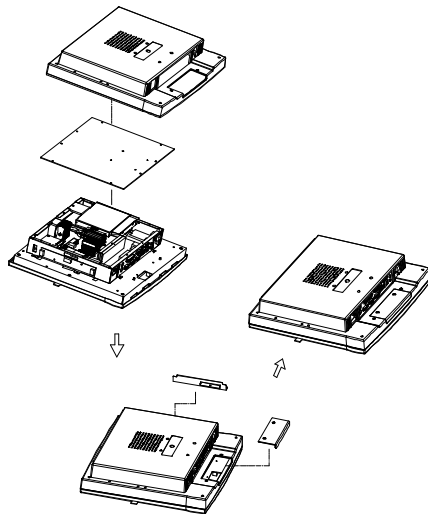
FIGURE 5-10: LP 1500 BACK MODULE ASSEMBLY

4.6. Panel Mounting

The LP 1500 system provides a set of optional mounting brackets for system panel mounting.   The following figures illustrate the way to use the brackets for panel mounting.
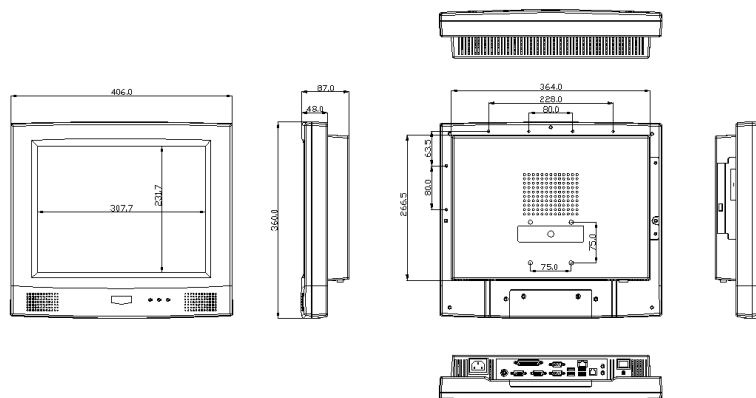
LP 1500 VESA HOLES

5. SYSTEM MOTHERBOARD & I/O BOARD

The system controller used in the LP 1500 system is a special-design Intel Socket 479 Celeron M/Pentium® M multimedia motherboard. All the onboard signal is connected to the external I/O ports via two I/O boards. This chapter provides jumper definition and connector signal of the motherboard and the I/O boards.

5.1. LP 1500 Motherboard

This section provides background information and detail specification on the LP 1500 system engine, PC 800. Sections include:

✧ General Information
✧ Features
✧ Specification
✧ Board placement & Dimension

5.1.1. General Information

The **PC 805** is an Intel Pentium M multimedia ATX motherboard with LCD/VGA controller, Ethernet 100/10, AC97 sound, and IDE flash disk. By integrating single chip, Intel 852GM, the PC 805 provides a high performance/low cost desktop solution.

Highly integrated, the PC 805 can adapt Intel® Pentium M 1.3 to 1.8G CPU. The built-in high speed PCI IDE controller supports both PIO and ATA 100 mode. Up to four IDE devices can be connected, including large hard disks, CD-ROM drives and other IDE devices. The full PC functionality coupled with its multi-I/Os stand ready to accommodate a wide range of PC peripherals. Compact in size and with its highly integrated multimedia and networking functions, the PC 805 is the most powerful PC engine to build any small footprint all-in-one PC system for integration into any space-constricted embedded applications.

Fully configurable and with its modular design, the PC 805 is an ideal platform for any consumer computing applications where space is a premium.

5.1.2.Specifications

PC 805: Multimedia Intel Pentium M Motherboard

       Intel Pentium M from 1.3 G+

PC 806: Multimedia Intel Celeron M Motherboard

       Intel Ultra Low Power Celeron M 900M~1G

◆ **Main Chipset**: Intel 852GM

◆ **System BIOS**: Phoenix Award PnP Flash BIOS

◆ **System Memory**: 2 x 184 pin DDR sockets supporting system memory up to 2GB

◆ **L2 Cache**: CPU built-in

◆ **Standard I/O**
- Serial ports x 4, COM 1, 2 & 4 with +5V/12V power output on pin 9;
  3 x RS-232, 1 x RS-232/422/485,
  COM 3 is internal type reserved for touch screen
- Parallel port x 1 SPP/EPP/ECP
- PS/2 keyboard interface x 1
- PS/2 mouse interface x 1
- DIO: Input x 2, output x 2
- USB interface x 4
- VGA interface x 1
- Brightness VR x 1

◆ **IrDA:** 6-pin header with CIR support

◆ **Ethernet**
- 100/10 Base-T Ethernet
- Support WAKE-ON-LAN

◆   **Display**

   VGA

- 4X AGP VGA controller, advanced hardware 2D/3D GUI engine
- Share memory architecture able to utilize display memory up to 64MB
- Maximum resolution up to 1920 x 1200 true color

   LCD

- Supports 2-channel LVDS LCD, resolution up to 1600x1200

◆ **Audio Function**
- Full duplex and independent sample rate converter for audio recording & playback
- Supports Microsoft DirectSound
- 3D positional audio effects
- Hi-performance, mixed-signal, stereo
- MIC-In, Speaker-Out
- Pin header for CD-audio in

◆ **Hardware Monitor**
- Monitoring processor & system
- Monitoring 5VSB, VBAT, 1.5V, 3.3V, +5V, +12V, -12V, and processor voltages
- Monitoring processor, chassis fan speeds
- Controlling processor and chassis fan speed and failure alarm
- Automatic fan on/off control
- Read back capability that displays temperature, voltage and fan speed
- Supporting Intel processor thermal diode output (real processor temperature)

◆ **Power:** DC 19V

◆ **Dimension**: 255*215 mm (L*W)

Specifications are subject to change without notice.

5.1.3. Locating Jumpers & Connectors

The following figure helps you to locate the jumpers and connectors on the motherboard.
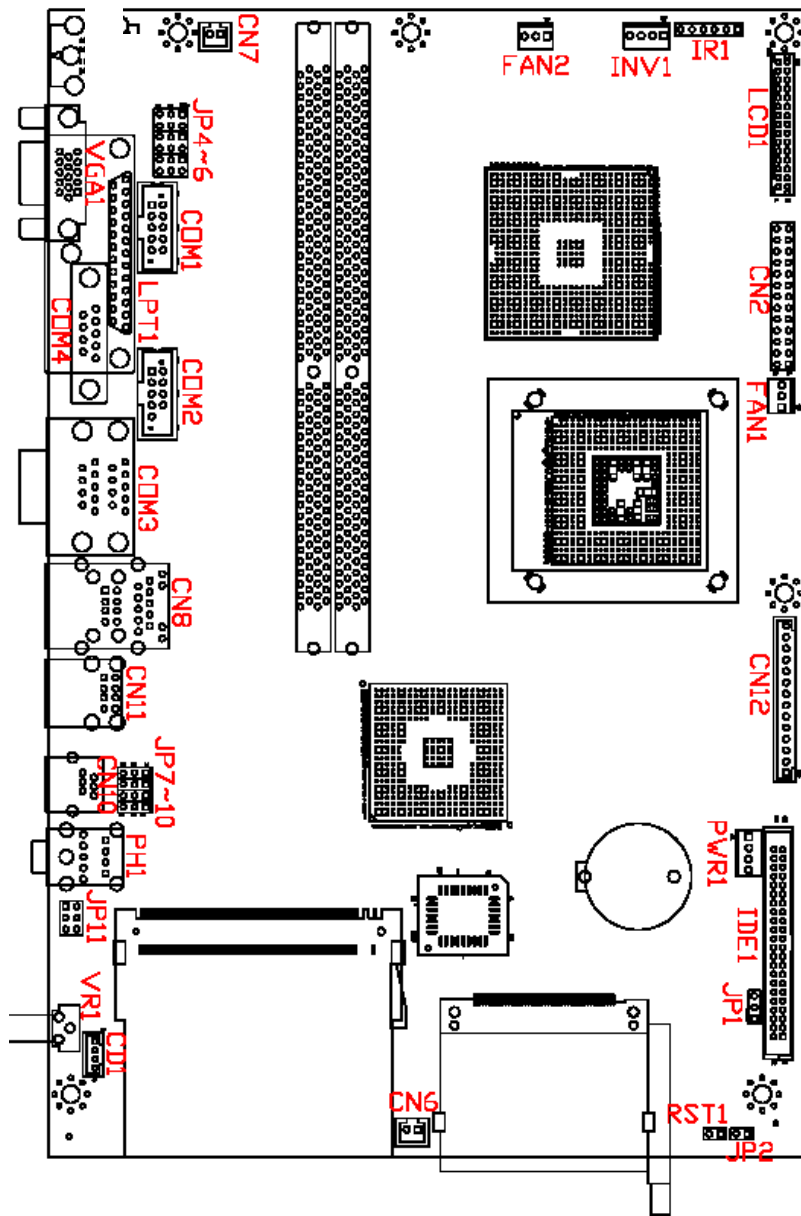
The following figure shows the location of the rear side connectors.

KEYBOARD   LPT1   COM4   LAN   MIC/LINE-OUT

DIO   BACKLIGHT VR

MOUSE   VGA1   COM1   COM2   USB   USB
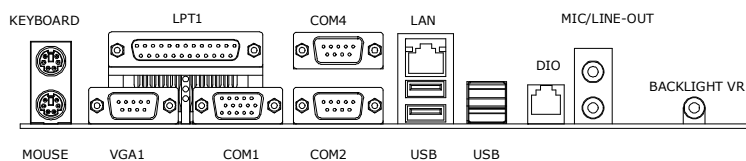
5.1.4 Jumpers & Jumper Setting

The table below lists the function of each jumper. The related jumper settings are shown in the coming sections.

Jumper	Description
JP1	Clear CMOS
JP7~10	DIO port address setting

5.1.3.1. *Clear CMOS (JP3)*

1-2	Normal
2-3	Clear CMOS

5.1.3.2. *DIO Port Address CMOS Setting*

DIO port Address in CMOS Setting can select ADDRESS 200H OR 208H

Read DIO IN BIT0~BIT3 IN DIO PORT ADDRES BIT0~3

WRITE DIO OUT BIT0~3 IN DIO PORT ADDRES BIT4~7

JP7: DIO port pin#4 select

1-2	DIO IN Bit 0
2-3	DIO OUT Bit 2

JP8: DIO port pin#5 select

1-2	DIO IN Bit 1
2-3	DIO OUT Bit 3

JP9: DIO port pin#6 select

1-2	DIO OUT Bit 0
2-3	DIO IN Bit 2

JP10: DIO port pin#7 select

1-2	DIO OUT Bit 1
2-3	DIO IN Bit 3

5.1.4. Connectors & Pin Assignment

The table below lists the function of each connector on the PC 800. Their corresponding pin assignments will be shown in the following sections.

Connector	Description
CN12	DC power connector
CN7	Touchscreen power connector
PWR1	CD-ROM power connector
INV1	LCD Inverter connector
LCD1	LCD connector
CN8	USB1, 2 connector
IDE1	Primary IDE connector
COM1	Serial port 1
COM2	Serial port 2
CD1	CD audio in
IR1	IR/CIR connector
CN2	IrDA/speaker/LED connector
FAN1	CPU FAN connector

FAN2	System FAN connector
JP2	External SMI connector
CN6	ATX power ON/OFF
RST1	RESET connector
VGA1	Analog VGA connector
COM4	COM4 connector
CN11	USB3, 4 port connector
PH1	Line-out, Microphone output
VR1	Backlight control
COM1	Serial port 3 (for touchscreen)
CN2	CF connector
JP11	LINE-IN,MIC Select

5.1.4.1. CN12: Power connector

CN12 is a non-standard power connector.   Its pin assignments are listed below

Pin #	Signal	Pin #	Signal
1	+12V	2	+12V
3	GND	4	+5V
5	+5V	6	5VDUAL
7	GND	8	+3.3V
9	+3.3V	10	PWRCTL
11	3VSB	12	GND
13	PWRGD	14	GND

5.1.4.2. CN7: Touchscreen Power Connector

CN7 is a 2-pin power connector to provide necessary power source for the touchscreen.

Pin #	Signal
1	GND
2	VCC

5.1.4.3. PWR1: CD-ROM Power Connector

PWR1 is 4-pin power connector to provide necessary power source for the internal CD-ROM devices.

Pin #	Signal
1	+12V
	GND
	GND
2	VCC

5.1.4.4. INV1: LCD Inverter Connector

Pin #	Signal
1	Backlight ADJ
2	GND
3	Backlight Enable
4	12V
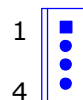
5.1.4.5.   LCD1: LCD Connector

Pin #	Signal	Pin #	Signal
1	YA0M	2	YA0P
3	YA1M	4	YA1P
5	YA2M	6	YA2P
7	GND	8	CLKAM
9	CLKAP	10	YA3M
11	YA3P	12	YB0M
13	YB0P	14	GND
15	YB1M	16	YB1P
17	GND	18	YB2M
19	YB2P	20	CLKBM
21	CLKBP	22	YB3M
23	YB3P	24	GND
25	VCC3	26	VCC3
27	VCC3	28	VCC
29	VCC	30	VCC

5.1.4.6.   IDE1: Primary HDD

The PC 800 provides 2 sets of 44-pin IDE connectors. The built-in high speed PCI IDE controller supports both PIO and ATA 100 mode. Up to four IDE devices can be connected, including small hard disks, CD-ROM drives and other IDE devices. Their corresponding pin assignments are listed below:

Pin #	Signal	Pin #	Signal
1	RESET#	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA10
9	DATA 4	10	DATA11
11	DATA 3	12	DATA12
13	DATA 2	14	DATA13
15	DATA 1	16	DATA14
17	DATA 0	18	DATA15
19	GND	20	NC
21	IDEREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	ICHRDY#	28	GND
29	DACK	30	GND
31	IDEIRQ	32	NC
33	A1	34	LID
35	A0	36	A2
37	IDECS0	38	IDECS1
39	HDD LED	40	GND
41	VCC	42	VCC
43	GND	44	NC

5.1.4.7. *COM2*

COM2 is a RS-232, 422 or 485, selected via BIOS setup.

Pin #	Signal	Pin #	Signal
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR/	8	RI
9	GND	10	RI (+5V/+12V)

5.1.4.8. *COM3, COM4*: DB-9

Pin #	Signal	Pin #	Signal
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI (+5V/12V)
5	GND		

5.1.4.9. *COM1*

COM 1 is an internal RS-232 reserved for touchscreen. Its corresponding pin assignment is listed as below;

Pin #	Signal	Pin #	Signal
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	VCC

5.1.4.10. CD1: CD Audio in

Pin #	Signal
1	Left channel
2	CD GND
3	CD GND
4	Right channel
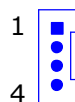
5.1.4.11. IR1: IR/CIR Connector

IR	
Pin #	Signal
1	5V
2	NC
3	IRRX
4	GND
5	IRTX
6	CIRRX

5.1.4.12. CN2: IRDA/SPEAKER/LED Connector

Pin #	Signal	Pin #	Signal
1	VCC	2	VCC
3	HDD LED	4	LAN LED
5	Suspend LED	6	IRTX
7	KEY	8	IRRX
9	BACKLIGHT CTRL INPUT	10	CIRRX (option)
11	GND	12	GND
13	SPK-LO	14	SPK-RO
15	SPK-LN	16	SPK-RN
17	GND	18	GND
19	USB P2-	20	EXT.KBDAT
21	USB P3+	22	EXT.KBCLK
23	USB P3-	24	EXT.MSDAT
25	USB P3+	26	EXT.MSCLK

5.1.4.13. FAN1~2: FAN Connector

Pin #	Signal
1	GND
2	+12V
3	FAN SPEED DECECT

5.1.4.14. JP2: External SMI Connector

Pin #	Signal
1	SMI
2	GND

5.1.4.15. CN6: ATX Power ON/OFF & Reset

Pin #	Signal
1	5VSB
2	Power ON/OFF

5.1.4.16. RST1: RESET SYSTEM Connector

Pin #	Signal
1	RESET
2	GND

LPT1: D-SUB-25 Parallel Port

Pin #	Signal	Pin #	Signal
1	STRB#	14	AFD#
2	DATA 0	15	ERROR#
3	DATA 1	16	INIT#
4	DATA 2	17	SLINT#
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	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT		

5.1.4.17. VGA1: VGA (D-SUB 15 Pin)

Pin #	Signal	Pin #	Signal	Pin #	Signal
1	Red	6	GND	11	NC
2	Green	7	GND	12	DDCDATA
3	Blue	8	GND	13	Hsync
4	NC	9	NC	14	Vsync
5	GND	10	GND	15	DDCCLK

5.1.4.18. CN11: USB 3, USB4 Connector

USB3		USB4	
Pin #	Signal	Pin #	Signal
1	USBVCC	1	USBVCC
2	Data-	2	Data-
3	Data+	3	Data+
4	GND	4	GND

5.1.4.19. CN8-USB: USB 1, USB2 Connector

USB1		USB2	
Pin #	Signal	Pin #	Signal
1	USBVCC	1	USBVCC
2	Data-	2	Data-
3	Data+	3	Data+
4	GND	4	GND

5.1.4.20. CN10: RJ-11 Connector

Pin #	Signal	Pin #	Signal
1	+12V	2	IN_0/OUT_2
3	IN_1/OUT_3	4	GND
5	OUT_0/IN_2	6	OUT_1/IN_3

5.1.4.21. CN8-LAN: RJ-45 Ethernet Connector

Pin #	Signal	Pin #	Signal
1	TD+	2	TD-
3	RO+	4	NC
5	NC	6	RO-
7	NC	8	NC

5.1.4.22. PH1-MIC

Pin #	Signal
1	Vref
2	NC
3	NC
4	MIC IN
5	GND

5.1.4.23. PH1-SPEAKER

Pin #	Signal
1	Right CHI
2	NC
3	NC
4	Left CH
5	GND

5.1.4.24. IR1: IR/CIR Connector

IR	
Pin #	Signal
1	5V
2	NC
3	IRRX
4	GND
5	IRTX
6	CIRRX

6. AWARD BIOS SETUP

The chapter describes how to set up BIOS configuration.

6.1. Award BIOS

The Award BIOS ROM builds in a setup program, which allows the users to modify the basic system configuration such as the current date and time or the type of peripheral devices attached to the computer.

Under the following conditions, the CMOS settings are to be changed :

1. The system is starting for the first time
2. The hardware devices attached to the systems have been changed
3. The CMOS memory has lost power and the configuration information has been erased.

The BIOS setup program is stored in ROM, which can be accessed by pressing <DEL> key on the keyboard immediately when the system is powered on.

In order to retain the specified setup information when the system power is turned off, the system setup information is stored in a battery-backed CMOS RAM. The battery is to ensure the settings will not be erased when the computer is turned off or reset. When the computer is powered on again, the system will read the settings stored in the CMOS RAM and compare them to the equipment check conducted during the power on self test (POST). If any error or mismatch occurs, an error message will be shown on the screen and the computer will be prompted to run the setup program.

6.2. Control Key Definition

↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc	Main Menu - Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu
PgUp	Increase the numeric value or make changes
PgDn	Decrease the numeric value or make changes
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F5	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7	Load the default
F10	Save all the CMOS changes, only for Main Menu

6.3. Getting Help

6.3.1. Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

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 <ESC>.

6.4. AWARD BIOS Setup

6.4.1. AWARD BIOS Setup Utility

Power on the computer and press <DEL> immediately to run the AWARD BIOS setup. The setup main menu will appear on the screen;

```
      Phoenix – AwardBIOS CMOS Setup Utility

 ➤ Standard CMOS Feature        ➤ Frequency/Voltage Control

 ➤ Advanced BOIS Features         Load Fail-Safe Defaults

 ➤ Advanced Chipset Features      Load Optimized Defaults

 ➤ Integrated Peripherals         Set Supervisor Password

 ➤ Power Management Setup         Set  User Password

 ➤ PnP/PCI Configurations         Save & Exit Setup

 ➤ PC Health Status              Exit Without Saving

  Esc : Quit                 ↑ ↓ → ←  :Select Item

  F10 : Save & Exit Setup

             Time, Date, Hard Disk Type…
```

Use the arrow keys to move among the items and press <Enter> to enter the sub-menu.

Standard CMOS Setup: This setup page includes all the items in standard compatible BIOS.

Advanced BIOS Features: This setup page includes all the items of Award special enhanced features.

Advanced Chipset Features: This setup page includes all the items of chipset special features.

Integrated Peripherals: This setup page includes all onboard peripherals.

Power Management Setup: This setup page includes all the items of Green function features.

PnP/PCI Configuration: This setup page includes all the configurations of PCI & PnP ISA resources.

PC Health Status: This setup page auto detects the temperature, voltage and fan speed.

Frequency/Voltage Control: This setup page includes the CPU/SDRAM/PCI frequency setting

Load Fail-Safe Defaults: BIOS Defaults indicates the most appropriate value of the system parameters that the system would be in safe configuration.

Load Optimized Defaults: Setup Defaults indicates the value of the system parameters that the system would be in the best performance configuration.

Set Supervisor Password: Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

Set User Password: Change, set, or disable User password. It allows you to limit access to the system and Setup, or just to Setup.

Save & exit setup: Save CMOS value settings to CMOS and exit setup.

Exit without saving: Abandon all CMOS value changes and exit setup.

6.4.2. Standard CMOS Features

Selecting **Standard CMOS Features** on the main menu displays the following menu. This menu allows the user to configure the system components such as date, time, hard disk drive, floppy disk drive and display type.

```
            Phoenix – AwardBIOS CMOS Setup Utility
                    Standard CMOS Features
┌─────────────────────────────────────────────┬──────────────────────────┐
│ Date (mm:dd:yy)        Web, Feb 23 005        │        Item Help         │
│ Time (hh:mm:ss)        11 : 7 : 48            │  Menu Level ➤            │
│                                               │                          │
│ IDE Primary  Master          [None]           │  Press [Enter] to enter  │
│ IDE Primary  Slave           [None]           │  next page for detail    │
│ IDE Secondary Master         [None]           │  hard drive settings     │
│ IDE Secondary Slave          [None]           │                          │
│                                               │                          │
│ Video                   [EGA/VGA]             │                          │
│ Halt  on               [All , But Keyboard]   │                          │
│ Panel  Number          [Setting By H/W]       │                          │
│                                               │                          │
│ Base Memory                 640K              │                          │
│ Extended  Memory            490496K           │                          │
│ Total  Memory               491520K           │                          │
├─────────────────────────────────────────────┴──────────────────────────┤
│ ↑ ↓ →  Move   Enter : Select   +/-/PU/PD :Value   F10 :Save   ESC :Exit   F1 :General Help │
│      F5 :  Previous Values     F6 : Fail-Safe Default     F7 : Optimized Defaults │
└─────────────────────────────────────────────────────────────────────────┘
```

▪ **Date**

The **Date** item show the current date held by the system. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date Properties utility.

The date format is <day>, <month>, <date>, <year>.

day	The day, from Sun to Sat, determined by the BIOS and is display-only
month	The month, Jan. through Dec.
date	The date, from 1 to 31 (or the maximum allowed in the month)
year	The year, from 1994 through 2079

▪ **Time**

The **Time** item show the current time held system. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Time Properties utility.

▪ The times format in <hour> <minute> <second>. The time is calculated base on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

Primary HDDs/Secondary HDDs

This field is used to configure the IDE hard drive installed in the system. Move the cursor to highlight the IDE Primary/Secondary Master/Slave fields and press <Enter>. The IDE Primary Master submenu opens:

IDE HDD Auto-Detection

Press <**Enter**> while this item is highlighted if you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel.

IDE Primary/Secondary Master/Slave

If you leave this item at *Auto*, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to *Manual* and then manually configure the drive by entering the characteristics of the drive in the fields described below:
- ✓ **Capacity** – displays the capacity of the HDD in megabytes (MB).
- ✓ **Cylinder** – indicates the number of cylinders that the HDD has. A cylinder is the sum total of all tracks that are in the same location on every disk surface.
- ✓ **Head** – displays the number of heads in the HDD. A head is a device that reads and writes data on the hard disk.
- ✓ **Precomp** – displays the track where precompensation is initiated. Precompensation is a feature whereby the HDD uses a stronger magnetic field to write data in sectors that are closer to the center of the disk. In CAV recording, in which the disk spins at a constant speed, the sectors closest to the spindle are packed tighter than the outer sectors.
- ✓ **Landing Zone** – displays the location of the safe non-data area on a hard disk that is used for parking the read/write head.
- ✓ **Sector** – displays the number of sectors available on the HDD. A sector is the smallest unit of storage space on a disk.

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

▪ **Drive A type/Drive B type**

The item identifies the types of floppy disk drive A or drive B that has been installed in the computer.

None	No floppy drive installed
360K, 5.25"	5.25 inch PC-type standard drive; 360K byte
1.2M, 5.25"	5.25 inch AT-type high-density drive; 1.2M bytes (3.5 inch when 3 Mode is Enabled).
720K, 3.5"	3.5 inch double-sided drive; 720K byte
1.44M, 3.5"	3.5 inch double-sided drive; 1.44M byte
2.88M, 3.5"	3.5 inch double-sided drive; 2.88M byte

▪ **Video**

This item defines the video mode of the system. This Motherboard has a built-in VGA graphics system; you must leave this item at the default setting.

▪ **Halt on**

This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.

▪ **Panel Number**

The item selects the panel resolution and LVDS interface for single or dual.

▪ **Base Memory**, **Extended Memory** and **Total Memory**

These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.
- ✓ **Base Memory –** This field displays the amount of conventional memory detected by the system during boot.
- ✓ **Extended Memory –** This field displays the amount of extended memory detected by the system during boot.

Total Memory – This field displays the total amount of memory (Base and Extended) detected by the system during boot.

6.4.3. Advanced BIOS Features

Selecting **Advanced BIOS Features** on the main menu displays this following menu.

```
            Phoenix – AwardBIOS CMOS Setup Utility
                    Advanced BIOS Features

➢  CPU Feature                 [Press Enter]         Item Help
   Virus Warning               [Disabled]       Menu Level➢
   CPU L1 & L2 Cache           [Enabled]        Allows you to choose
   Quick Power On Self Test    [Enabled]        the VIRUS warning
   First Boot device           [HDD-0]          Feature for IDE Hard
   Second Boot Device          [CDROM]          Disk boot sector
   Third Boot Device           [USB-FDD]        protection. If this
   Boot Other Device           [Enabled]        Function is enabled
   Boot up NumLock Status      [On]             and someone
   Gate A20 Option             [Fast]           attempt  to write
   Typematic Rate Setting      [Disabled]       data into this area ,
 x Typematic Rate (Chars/sec)  6                BIOS will show a
 x Typematic Delay  (Msec)     250              warning message on
   Security Option             [Setup]          screen and alarm
   APIC Mode                   [Enable]         beep
   MPS Version Control For OS  [1.4]
   OS Select For DRAM > 64MB   [Non-OS2]
   Report No FDD For WIN 95    [No]
   Small Logo (EPA) Show       [Disabled]

↑ ↓ → Move  Enter : Select  +/-/PU/PD :Value   F10 :Save   ESC :Exit  F1 :General Help
    F5 :  Previous Values      F6 : Fail-Safe Default      F7 : Optimized Defaults
```

- **CPU Feature**

Setting the CPU thermal management mode

- **Virus Warning**

When enabled, this item provides protection against viruses that try to write to the boot sector and partition table of the hard disk drive. You need to disable this item when installing an operating system. We recommend that you enable anti-virus protection as soon as you have installed an operating system.

Enabled: activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Disabled: no warning message will appear when anything attempts to access the boot sector or hard disk partition table.

- **CPU Internal Cache/External Cache**

All processors that can be installed in this Motherboard use internal level 1 (L1) and external level 2 (L2) cache memory. These two items speed up memory access. However, it still depends on CPU/chipset design. Leave this item at the default setting for better performance.

Enabled: enables cache

Disabled: disable cache

- **Quick Power On Self Test**

This category speeds up Power on Self Test (POST) after you power up the computer. If it is set to *Enable*, BIOS will shorten or skip some check items during POST.

Enabled: enables quick POST

Disabled: normal POST

- **First/Second/Third/Boot Device**

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

▪ **Boot Other Device**

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the *First*, *Second*, and *Third* boot devices.

▪ **Boot Up NumLock Status**

This item defines if the keyboard Num Lock key is active when the system is started.

▪ **Gate A20 Option**

This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the default setting.

▪ **Typematic Rate Setting**

If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for the keyboard.

▪ **Typematic Rate (Chars/Sec)**

Use this item to define how many characters per second are generated by a held-down key.

▪ **Typematic Delay (Msec)**

Use this item to define how many milliseconds must elapse before a held-down key begins generating repeat characters.

▪ **Security Option**

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.

▪ **APIC Mode**

Enable or Disable APIC(Advanced Programmable Interrupt Controller) mode

▪ **MPS Version Control For OS**

This option is only valid for multiprocessor motherboards as it specifies the version of the Multiprocessor Specification (MPS) that the motherboard will use. The MPS is a specification by which PC manufacturers design and build Intel architecture systems with two or more processors.

MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. It is also required for a secondary PCI bus to work without the need for a bridge. Newer versions of server operating systems will generally support MPS 1.4 and as such, you should change the BIOS Setup from the default of 1.1 to 1.4 if your operating system supports version 1.4. Leave it as 1.1 only if you are running older server OSes.

▪ **OS Select For DRAM > 64MB**

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

▪ **Report No FDD For Win 95**

If you are using Windows 95/98 without a floppy disk drive, select Enabled to release IRQ6. This is required to pass Windows 95/98's SCT test. You should also disable the Onboard FDC Controller in the Integrated Peripherals screen when there's no floppy drive in the system. If you set this feature to Disabled, the BIOS will not report the missing floppy drive to Win95/98.

▪ **Small Logo (EPA)Show**

This item determines whether the EPA logo is to appear during boot up.

6.4.4. Advanced Chipset Features

Selecting **Advanced Chipset Features** on the main menu displays this following menu.

This option displays critical timing parameters of the Motherboard. Leave the items on this menu at their default settings unless you are very familiar with the technical specifications of the system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into the system.

```
          Phoenix – AwardBIOS CMOS Setup Utility
                  Advanced Chipset Features

    DRAM Timing Selectable       [By SPD]              Item Help
  x CAS Latency Time             2.5                 Menu Level
  x Active to Precharge delay    6
  x DRAM RAS# to CAS# delay      3
  x DRAN RAS# precharge          3
    DRAM Date Integrity Mode     Non-ECC
    MGM Core Frequency           Auto Max 400/333MHz
    System BIOS Cacheable        [Enabled]
    Video BIOS Cacheable         [Disabled]
    Memory Hole at 15m-16M       [Disabled]
    Delayed Transaction          [Enabled]
    Delay Prior to thermal       [16 Min]
    AGP Aperture Size (MB)       [64]

    ** On-Chip VGA Setting **
    On-Chip VGA                  [Enabled]
    On-Chip Frame Buffer Size    [32MB]
    Boot display                 [VBIOS Default]


  ↑ ↓ → Move   Enter : Select   +/-/PU/PD : Value   F10 : Save   ESC : Exit   F1 : General Help
       F5 :  Previous Values          F6 : Fail-Safe Default          F7 : Optimized Defaults
```

- **DRAM Timing Selectable**

Menu setting the DRAM time

- **MGM Core Frequency**

This select equates are used for determining the FSB MEM/GFX LOW/GFX HIGH core frequency DRAM data Integrity mode

- **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.

The options are *Enabled* or *Disabled*.

- **Video BIOS Cacheable**

Selecting *Enabled* allows caching of the Video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The options are *Enabled* or *Disabled*.

- **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.

- **Delayed Transaction**

The Delayed Transaction feature controls the operation of that embedded 32-bit posted write buffer. If *enabled*, all PCI-to-ISA writes are buffered and the PCI bus is released after writing to the buffer. If Delayed Transaction is *disabled*, the PCI bus will bypass the write buffer and write directly to the ISA bus

- **Delay Prior to Thermal**

The Delay Prior To Thermal BIOS feature controls the activation of the Thermal Monitor's automatic mode. It allows you to determine when the Pentium 4's Thermal Monitor should be activated in automatic mode after the system boots. For example, with the default value of 16 Minutes, the BIOS activates the Thermal Monitor in automatic mode 16 minutes after the system starts booting up.

- **AGP Aperture Size (MB)**

This item is to select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The options are *4M, 8M, 16M, 32M, 64M, 128M, 256M*.

- **On-Chip VGA**

This item is to enable or disable the onboard VGA function

- **On-Chip Frame Buffer Size**

This item is to set buffer size

The options are *1M.4M.8M.16M* or 32*M*

- **Boot Display**

This item is to select the boot display from VBIOS Default or CRT,LCD

6.4.5. Integrated Peripherals

Selecting **Integrated Peripherals** on the main menu displays the following menu. This option defines the operation of peripheral components on the system's input/output ports.

```
          Phoenix – AwardBIOS CMOS Setup Utility
                  Integrated Peripherals
  ➢ OnChip IDE Device              [Press Enter]        Item Help
  ➢ OnChip Device                  [Press Enter]     Menu Level➢
  ➢ SuperIO Device                 [Press Enter]




  ↑ ↓ →  Move  Enter : Select  +/-/PU/PD : Value   F10 : Save   ESC : Exit   F1 : General Help
      F5 :  Previous Values         F6 : Fail-Safe Default        F7 : Optimized Defaults
```

6.4.5.1. OnChip IDE Device

If the **OnChip IDE Device** option is selected from the **Integrated Peripherals** menu, the screen below will appear.

```
             Phoenix – AwardBIOS CMOS Setup Utility
                       OnChip IDE Device
  ┌──────────────────────────────────────────────┬─────────────────────┐
  │ On-Chip Primary   PCI IDE      [Enabled]      │      Item Help       │
  │ IDE Primary Master PIO         [Auto]         │ Menu Level ➢         │
  │ IDE Primary Slave  PIO         [Auto]         │                      │
  │ IDE Primary Master UDMA        [Auto]         │                      │
  │ IDE Primary Slave  UDMA        [Auto]         │                      │
  │ On-Chip Secondary PCI IDE      [Enabled]      │                      │
  │ IDE secondary Master PIO       [Auto]         │                      │
  │ IDE secondary Slave  PIO       [Auto]         │                      │
  │ IDE secondary Master UDMA      [Auto]         │                      │
  │ IDE secondary Slave  UDMA      [Auto]         │                      │
  │                                               │                      │
  │ IDE HDD Block Mode             [Enabled]      │                      │
  │                                               │                      │
  └──────────────────────────────────────────────┴─────────────────────┘
  ↑ ↓ →  Move   Enter : Select   +/-/PU/PD :Value   F10 :Save   ESC :Exit   F1 :General Help
       F5 :  Previous Values        F6 : Fail-Safe Default        F7 : Optimized Defaults
```

- **On-Chip Primary & Secondary PCI/IDE**

This option enables you to activate/inactivate the Primary & Secondary IDE channel of the motherboard's onboard IDE controller. You should leave this enabled if you are using this onboard IDE channel. Disabling it will prevent the IDE devices attached to this channel from functioning at all.

- **IDE Primary 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.

The options are *Auto, Mode 0, Mode 1, Mode 2, Mode 3* or *Mode 4.*

- **Primary Master/Slave UltraDMA**

UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 100MB/s. When you select Auto in the four IDE UDMA fields (for interface supports), the system automatically determines the optimal data transfer rate for each IDE device.

The options are *Auto* or *Disabled.*

- **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/write per sector the drive can support.

The options are *Enabled* or *Disabled.*

6.4.5.2. OnChip Device

If the **OnChip Device** option is selected from the **Integrated Peripherals** menu, the screen below will appear.

```
            Phoenix – AwardBIOS CMOS Setup Utility
                        OnChip Device
   ┌──────────────────────────────────────────────┬──────────────────┐
   │  USB Controller              [Enabled]        │    Item Help     │
   │  USB 2.0 Controller          [Enabled]        │  Menu Level▷     │
   │  USB Keyboard Support        [Auto]           │                  │
   │  AC97 Audio                  [Auto]           │                  │
   │  Init Display First          [Onboard]        │                  │
   │  Flash ROM Write             [Enabled]        │                  │
   │  LAN Control                 [Enabled]        │                  │
   │                                               │                  │
   │                                               │                  │
   └──────────────────────────────────────────────┴──────────────────┘
   ↑ ↓ → Move   Enter : Select   +/-/PU/PD :Value  F10 :Save   ESC :Exit  F1 :General Help
        F5 :  Previous Values         F6 : Fail-Safe Default        F7 : Optimized Defaults
```
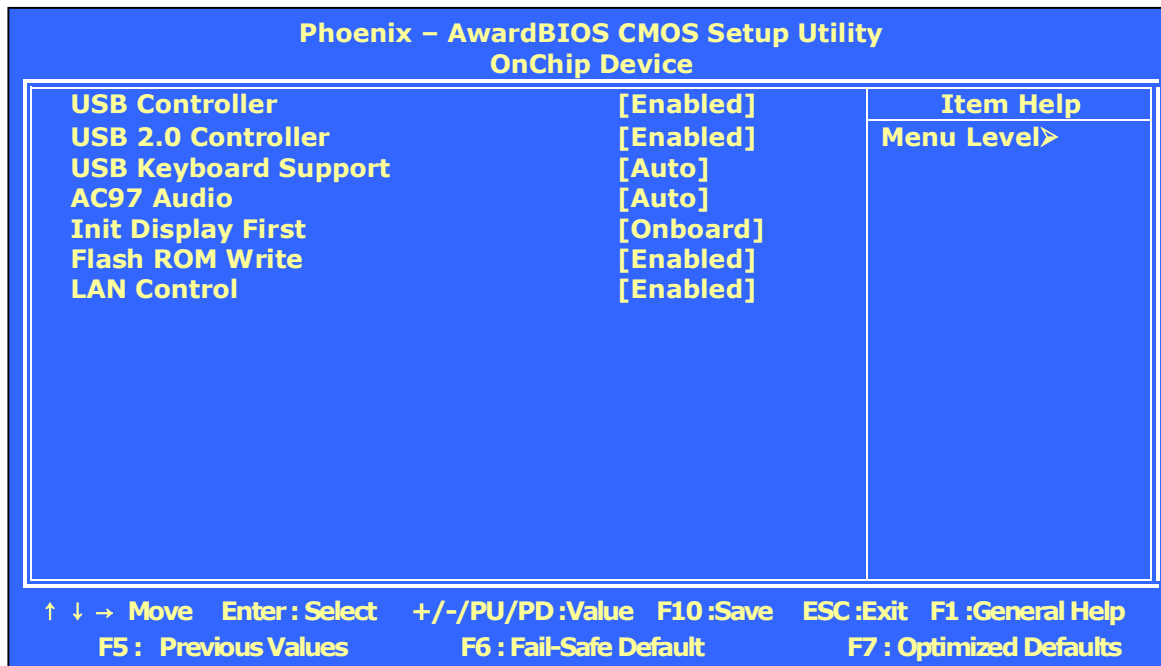
- **USB Controller**

This function is similar to Assign IRQ For USB. It enables or disables IRQ allocation for the USB (Universal Serial Bus). Enable this if you are using a USB device. If you disable this while using a USB device, you may have problems running that device. However, if you don't use any USB devices, set the option to Disabled. It will free up an IRQ for other devices to use.

- **USB 2.0 Controller**

This item is for disable/enable EHCI controller only, Support the high speed USB device.

The options are *Enabled* or *Disabled.*

- **USB Keyboard Support**

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

The options are *Enabled* or *Disabled.*

- **AC97 Audio**

Select Auto to support AC97 Audio.

The options are *Auto or Disabled.*

- **Init Display First**

This item allows you to decide to active which Display controller first by PCI slot or Onboard built-in display.

The options are *PCI Slot* or *Onboard*

- **Flash ROM Write**

This item supports the BIOS ROM write *Enable/Boot block lock/Disable*

- **Onboard LAN Function**

The item can enable or disable the onboard Ethernet controller

6.4.5.3. *Superio Device*

If the **SuperIO Device** option is selected from the **Integrated Peripherals** menu, the screen below will appear.

```
                Phoenix – AwardBIOS CMOS Setup Utility
                           SuperIO Device
      POWER ON Function            [BUTTON INLY]        Item Help
   X  KB Power ON Password         Enter             Menu Level▷
   X  Hot Key Power ON             Ctrl-F1
      Onboard FDC Controller       [Enable]
      Onboard Serial Port 1        [3F8]
      Onboard UART 1 IRQ           [IRQ4]
      COM2 Selectable Type         [RS232]
      Onboard Serial Port 2        [2F8]
      Onboard UART 2 IRQ           [IRQ3]
      UART Mode Select             [Normal]
   X  RXD , TXD Active             Hi ,Lo
   X  IR Transmission Delay        Disabled
   X  UR2 Duplex mode              Half
   X  Use IR Pins                  IR-Rx2Tx2
      Onboard Serial Port 3        [3E8]
      Onboard UART 3 IRQ           [IRQ10]
      Onboard Serial Port 4        [2E8]
      Onboard UART 4 IRQ           [IRQ11]
      Onboard Parallel Port 1      [378/IRQ7]
      Parallel Port 1 Mode         [SPP]
   X  EPP1 Mode Select             EPP1.7
   X  ECP1 Mode Use DMA            3

   ↑↓→← :Move   Enter :Select   +/-/PU/PD :Value   F10 :Save   ESC :Exit   F1 :General Help
```

▪ **Power On Function**

This function allows you to set the method by which your system can be turned on. Normally, it should be set as Button Only so that your system will only start up if you use the button/switch on the casing. Other alternative options including starting up the system using the keyboard (if it supports the Keyboard 98 standard), a keyboard hot key (for other standard keyboards) or the mouse.

▪ **KB Power On Password**

This item can be used to prompt a password when the system power is resumed by keyboard action.

▪ **Hot Key Power On**

This item can be used to prompt a hot key when the system power is resumed by keyboard action.

▪ **ONBOARD FDC CONTROLLER**

This function allows you to enable or disable the onboard floppy drive controller. If you are using a floppy drive connected to the onboard controller, then leave it at the default setting of Enabled. But if you are using an add-on FDD controller or if you are not using any floppy drive at all, set it to Disabled to save an IRQ.

▪ **Onboard Serial Port 1/Port 2/Port 3/Port 4**

This item is to select an address for the serial ports.

The options are *3F8/2F8/3E8/2E8, Disabled.*

▪ **COM2 Selectable Type**

This item is to setting the serial port 2 type

The options are RS232/RS422/RS485

▪ **Onboard UART 1/ UART 2/ UART 3/ UART 4 IRQ**

This item is to select an IRQ for the serial ports.

The options are *IRQ4/IRQ3/IRQ10/IRQ11/IRQ9/IRQ5,*

▪ **Onboard Parallel Port 1:**

This item allows you to determine the onboard parallel port controller's I/O address and parallel port mode.

The options are *378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disable.*

The options are *SPP, EPP, ECP, ECP+EPP, Normal.*

▪ **DIO Port Address**

This item is to select an address for the DIO Port

The options are *200/208*

6.4.6. Power Management Setup

Selecting **Power Management Setup** on the main menu displays the following menu.

```
           Phoenix – AwardBIOS CMOS Setup Utility
                 Power Management Device
  ┌────────────────────────────────────────────────────────────┐
  │  ACPI Function              [Enabled]        Item Help      │
  │  ACPI Suspend Type          [S1(POS)]     Menu Level ⊳      │
  │X Run VGABIOS If S3 resume    NO                             │
  │  Power Management           [User Define]                  │
  │  Video off Method           [DPMS]                         │
  │  Video off In Suspend       [Yes]                          │
  │  Suspend Type               [Stop Grant]                   │
  │  MODEM Use IRQ              [3]                             │
  │  Suspend Mode               [Disabled]                     │
  │  HDD Power Down             [Disabled]                     │
  │  Soft –off by PWR-BTTN      [Instant-off]                 │
  │  POWER After PWR-Fail       [off]                          │
  │  Wake-up by PCI card        [Enabled]                     │
  │  Power on by Ring           [Enabled]                     │
  │  Wake up on LAN             [Enabled]                     │
  │X USB KB Wake-up From S3      Disabled                      │
  │  Resume by alarm            [Disabled]                     │
  │X Date (of Month ) Alarm      0                             │
  │X Time (hh:mm:ss) Alarm       0 : 0 : 0                     │
  │                                                            │
  │  ** Reload Global Time Events**                           │
  │  Primary IDE 0              [Disabled]                     │
  │  Primary IDE 1              [Disabled]                     │
  │  Secondary IDE 0            [Disabled]                     │
  │  Secondary IDE 1            [Disabled]                     │
  │  FDD,COM,LPT Port           [Disabled]                     │
  │  PCI PIRQ[A-D]#             [Disabled]                     │
  └────────────────────────────────────────────────────────────┘
  ↑ ↓ → Move   Enter : Select   +/-/PU/PD :Value   F10 :Save   ESC :Exit   F1 :General Help
        F5 : Previous Values       F6 : Fail-Safe Default      F7 : Optimized Defaults
```

- **ACPI Function**

This item allows the user to select the ACPI (Advanced Configuration and Power Interface) function.

The options are S1, S3 & Disable

- **Power Management**

Power Management mode setting is to select the wake-up device.

- **Video Off Method**

This item defines how the video is powered down to save power. The default setting is DPMS Mode.

- **Video Off in Suspend**

This option defines if the video is powered down when the system is put into suspend mode. The default setting is Suspend -> Off.

- **Suspend Type**

If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

- **MODEM Use IRQ**

If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the Motherboard Wake On Modem connector for this feature to work. The default setting is 3.

▪ **Suspend Mode**

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 Power Management event is detected. Options are from 1 Min to 1 Hour and Disabled. The default setting is *Disabled*.

▪ **HDD Power Down**

The IDE hard drive will spin down if it is not accessed within a specified length of time. Options are from 1 Min to 15 Min and Disabled. The default setting is 15 Min.

▪ **Soft-Off by PWR-BTN**

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the normal power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec., you have to hold the power button down for four seconds to cause a software power down. The default setting is Instant-Off.

▪ **Wake-Up by PCI card**

Use this item to enable PCI activity to wake up the system from a power-saving mode. The default setting is *Disabled*.

▪ **Power On by Ring**

Use this item to enable modem activity to wakeup the system from a power saving mode.

▪ **Wake up on LAN**

Use this item to enable LAN activity to wake up the system from a power-saving mode. The default setting is *Disabled*.

▪ **USB KB Wake-up from S3**

When enabled, the system power will resume the system from a power saving mode if there is any USB keyboard activity.

▪ **Resume by Alarm**

When set to Enabled, the following two fields become available and you can set the date (day of the month), hour, minute and second to turn on your system. When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time. The default setting is *Disabled*.

▪ **Date (of Month) Alarm**

When set to "0" the system powers on everyday at the time specified in the "Time (hh:mm:ss) Alarm" field. Select a date from 1 to 31 for the system to power on at the time specified in the "Time (hh:mm:ss) Alarm" field. The default setting is 0.

Time (hh:mm:ss) Alarm

Set the time for the system to power on as defined in the 'Date (of Month) Alarm" field.

** Reload Global Timer Events **

Global Timer (power management) events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything that occurs to a device that is configured as Enabled, even when the system is in a power-down mode.

▪ **Primary/Secondary IDE 0/1**

When these items are enabled, the system will restart the power-saving timeout counters when any activity is detected on any of the drives or devices on the primary or secondary IDE channels.

▪ **FDD, COM, LPT Port**

When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the floppy disk drive, serial ports, or the parallel port. The default setting is *Disabled*.

▪ **PCI PIRQ[A-D]#**

When disabled, any PCI device set as the Master will not power on the system. The default setting is *Disabled*.

Press <Esc> to return to the main menu.

6.4.7.PnP/PCI Configuration

Selecting **PnP/PCI Configuration** on the main menu displays the following menu.

```
            Phoenix – AwardBIOS CMOS Setup Utility
                    PnP/PCI Configurations
┌──────────────────────────────────────────┬─────────────────────┐
│  Reset Configuration Data    [Disabled]   │      Item Help       │
│                                           │  Menu Level▷         │
│  Resource controlled by      [Auto(ESCD)] │                      │
│ X IRQ Resources              [Press Enter]│                      │
│                                           │                      │
│  PCI/VGA Palette Snoop       [Disabled]   │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
└──────────────────────────────────────────┴─────────────────────┘
   ↑ ↓ →  Move   Enter : Select   +/-/PU/PD :Value   F10 :Save   ESC :Exit  F1 :General Help
          F5 :  Previous Values          F6 : Fail-Safe Default      F7 : Optimized Defaults
```

- **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 can not boot.

The options are *Enabled* or *Disabled*.

- **Resource controlled by**

The Award Plug and Play BIOS has the capacity to automatically configure the boot and Plug and Play compatible devices.

However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows☐95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "☐").

The options are *Auto (ESCD)*, *Manual*.

- **IRQ Resources**

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

- **IRQ3/4/5/7/9/10/11/12/14/15 assigned to**

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA is for devices compliant with the original PC AT bus specification. PCI/ISA PnP is for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The options are *PCI Device or Reserved*.

- **PCI/VGA Palette Snoop**

This option is only useful if you use an MPEG card or an add-on card that makes use of the graphics card's Feature Connector. It corrects incorrect color reproduction by "snooping" into the graphics card's frame buffer memory and modifying (synchronizing) the information delivered from the graphics card's Feature Connector to the MPEG or add-on card. It will also solve the problem of display inversion to a black screen after using the MPEG card.

6.4.8. PC Health Status

Selecting **PC Health Status** on the main menu displays the following menu.

This option auto detects the system's temperature, voltage and fan speed.

Phoenix – AwardBIOS CMOS Setup Utility		
PC Health Status		
Shutdown Temperature	**[Disabled]**	**Item Help**
VCore (V)	1.26 V	Menu Level▷
+1.5V	1.52 V	
+3.3V	3.32 V	
+ 5 V	5.05 V	
+12 V	12.03 V	
VBAT (V)	3.23 V	
5VSB (V)	4.99 V	
Current System Temp	49 ℃	
Current System Temp	49 ℃	
Fan1 Speed	0 RPM	
Fan2 Speed	2732 RPM	

↑ ↓ → **Move**   **Enter : Select**   **+/-/PU/PD : Value**   **F10 : Save**   **ESC : Exit**   **1 : General Help**
F5 : Previous Values   F6 : Fail-Safe Default   F7 : Optimized Defaults

▪ **Shutdown Temperature**

This item allows you to select System shutdown temperature.

The options are *60°C/140 ^{o}F, 65 ^{o}C /149 ^{o}F, 70 ^{o}C /158 ^{o}F or Disabled*.

6.4.9. Frequency Voltage Control

This setup page is for the CPU, SDRAM and PCI frequency setting.

```
          Phoenix – AwardBIOS CMOS Setup Utility
                Frequency/Voltage Control

   Auto Detect PCI Clk          [Enabled]         Item Help
   Spread Spectrum              [Disabled]     Menu Level⯈
   CPU Clock                    [100MHz]




↑ ↓ → Move   Enter : Select   +/-/PU/PD :Value   F10 :Save   ESC :Exit  F1 :General Help
    F5 :  Previous Values         F6 : Fail-Safe Default        F7 : Optimized Defaults
```

▪ **Auto Detect PCI Clk**

This item allows you to select auto detect PCI Clock.

The options are *Enabled* or *Disabled*.

▪ **Spread Spectrum**

This item allows you to Enabled/Disabled the spread spectrum modulate.

The options are *Enabled* or *Disabled*.

▪ **CPU Clock**

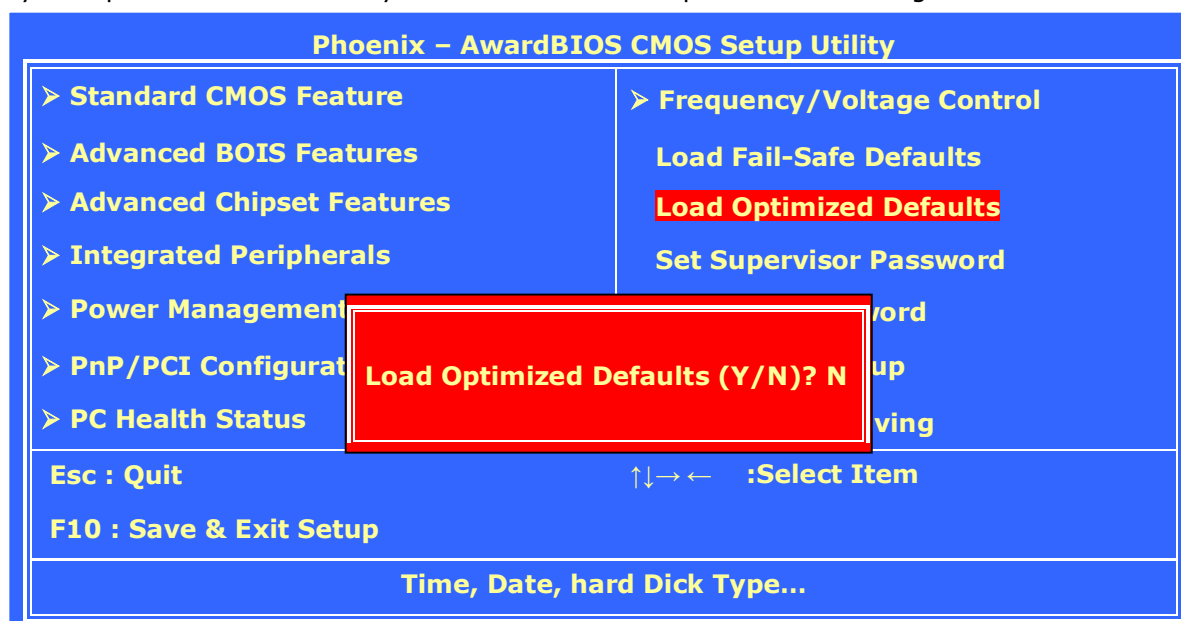This item allows you to select CPU frequency.

6.4.10. Load Fail-Safe Defaults

The default values of the **Load Fail-Safe Defaults** indicate the most appropriate value of the system parameters that the system would be in safe configuration.

```
             Phoenix – AwardBIOS CMOS Setup Utility

  ⯈ Standard CMOS Feature         ⯈ Frequency/Voltage Control

  ⯈ Advanced BOIS Features         Load Fail-Safe Defaults

  ⯈ Advanced Chipset Features      Load Optimized Defaults

  ⯈ Integrated Peripherals         Set Supervisor Password

  ⯈ Power Management                           word

  ⯈ PnP/PCI Configurati                        tup
                           Load fail-safe Defaults (Y/N)? N
  ⯈ PC Health Status                          aving

   Esc : Quit                  ↑↓→←   :Select Item

   F10 : Save & Exit Setup

              Time, Date, hard Dick Type...
```

6.4.11. Load Optimized Defaults

The default values of the **Load Optimized Defaults** indicate the most appropriate value of the system parameters that the system would be in best performance configuration.

```
           Phoenix – AwardBIOS CMOS Setup Utility

  ➢ Standard CMOS Feature          ➢ Frequency/Voltage Control

  ➢ Advanced BOIS Features            Load Fail-Safe Defaults

  ➢ Advanced Chipset Features         Load Optimized Defaults

  ➢ Integrated Peripherals            Set Supervisor Password

  ➢ Power Management                              word

  ➢ PnP/PCI Configurat    Load Optimized Defaults (Y/N)? N    up

  ➢ PC Health Status                              ving

   Esc : Quit                   ↑↓→←   :Select Item

   F10 : Save & Exit Setup

              Time, Date, hard Dick Type...
```

6.4.12.   User Password

The **USER PASSWORD** is used to set the password. To change the password, select this option from the main menu and press <Enter>.

If the CMOS does not work properly or the **USER PASSWORD** option is selected for the first time, then a default password is stored in the ROM. The following message will appear on the screen;

Enter Password

Press <Enter>.

If the CMOS is working properly or the **USER PASSWORD** option is selected to change the default password, then the current password (the ROM password or the use-defined password) stored in the ROM needs to be entered first. The following message will appear on the screen;
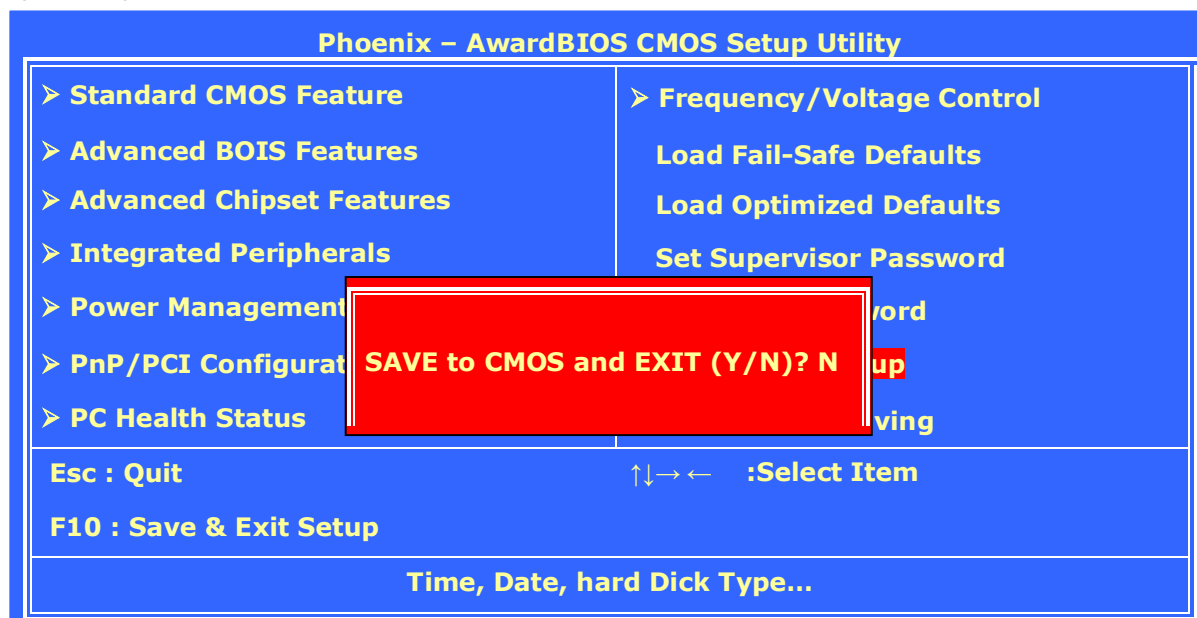
Confirm Password

Enter the current password and press <Enter>.

After pressing <Enter>, then the new password (8 characters at most) can be entered now. The new password will be stored in the CMOS.

Please note that to enable this option, either **Setup** or **System** is to be selected from the **ADVANCED BIOS FEATRUES** first.
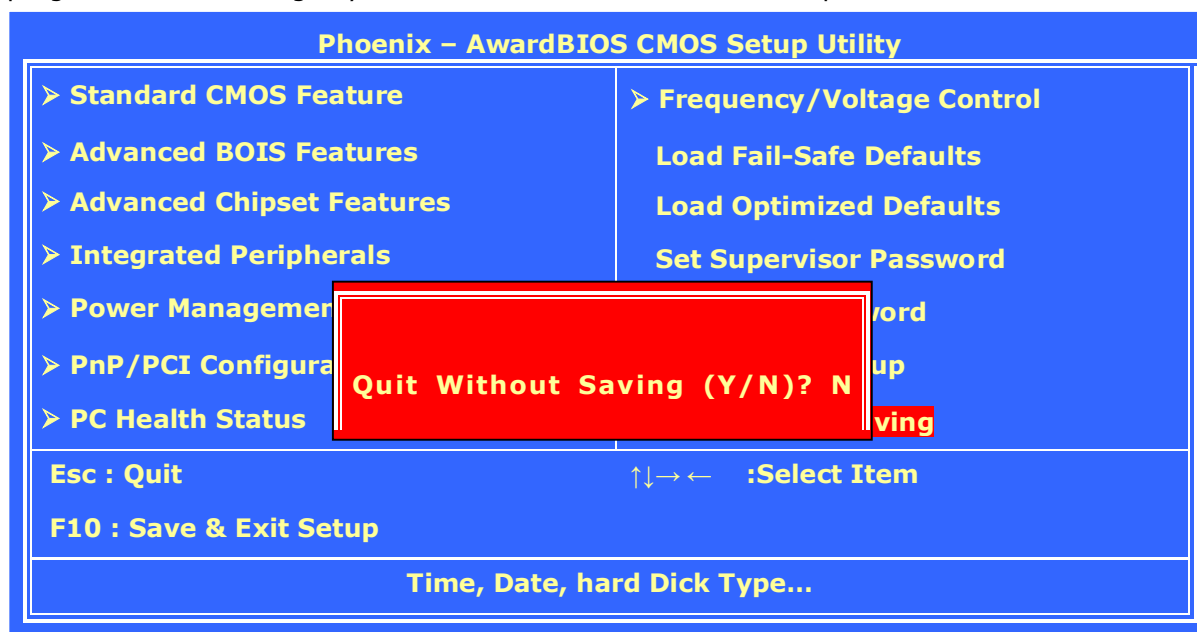
6.4.13. Save and Exit Setup

If the **Save & Exit Setup** option is selected, the values entered the setup utilities will be saved in the chipset's CMOS memory. When the system is turned on every time, the CPU will check the CMOS to compare the CMOS data to see whether it matches the system. These data are very important for the system operation.

Phoenix – AwardBIOS CMOS Setup Utility

➢ Standard CMOS Feature	➢ Frequency/Voltage Control
➢ Advanced BOIS Features	Load Fail-Safe Defaults
➢ Advanced Chipset Features	Load Optimized Defaults
➢ Integrated Peripherals	Set Supervisor Password
➢ Power Management	**SAVE to CMOS and EXIT (Y/N)? N**
➢ PnP/PCI Configurat	
➢ PC Health Status	

Esc : Quit   ↑↓→←   :Select Item

F10 : Save & Exit Setup

Time, Date, hard Dick Type…

6.4.14. Exit Without Saving

If the **Exit Without Saving** option is selected and <ENTER> is pressed, you will exit the Setup program without saving any new values. The CMOS will still keep the old values.

Phoenix – AwardBIOS CMOS Setup Utility

➢ Standard CMOS Feature	➢ Frequency/Voltage Control
➢ Advanced BOIS Features	Load Fail-Safe Defaults
➢ Advanced Chipset Features	Load Optimized Defaults
➢ Integrated Peripherals	Set Supervisor Password
➢ Power Managemer	
➢ PnP/PCI Configura	**Quit Without Saving (Y/N)? N**
➢ PC Health Status	

Esc : Quit   ↑↓→←   :Select Item

F10 : Save & Exit Setup

Time, Date, hard Dick Type…

7. SOFTWARE & DRIVERS INSTALLATION

The chapter introduces the PC805/PC806 onboard VGA, Ethernet, Audio and the respective drivers and installation.

7.1. System Chipset Drivers

The system chipset used on PC805/PC806 is **Intel 852GM**. The chipset drivers for different operating systems are stored under the following route:

Driver/Motherboard/PC805_PC806

For updated system drivers, please have them downloaded from the following website

http://www.intel.com

7.2. IDE Acceleration Drivers

The PC805/PC806 is able to support UDMA IDE. To extend this functionality, the UDMA acceleration needs to be installed first. The related drivers are stored under the following route:

Driver/Motherboard/PC805_PC806

7.3. Ethernet Drivers

The PC850/PC855 provides a 10/100 Base T fast Ethernet.

The Ethernet chipset used on PC850/PC855 is **Realtek RTL8100C**. The PC850/PC855 Ethernet drive diskette or CD diskette contains the following drivers.

Realtek RTL8100 Ethernet drivers for

- ✧ Windows 95/95OSR2
- ✧ Windows 98
- ✧ Windows 2000
- ✧ Windows NT
- ✧ Windows ME
- ✧ Windows XP

The related drivers are stored under the following route:

Driver/Motherboard/PC805_PC806/LAN

For the Ethernet drivers, please download the updated drivers from the following website

http://www.realtek.com.tw

7.4. PC850/PC855 AGP XGA

By integrating an advanced hardware 2D/3D GUI engine and 64-bit graphic display interface, the PC850/PC855 can deliver AGP 4X performance and memory bandwidth of up to 1GB. It adopts *Share System Memory* architecture that can flexibly utilize the frame buffer size up to 64MB.

The PC850/PC855 XGA driver diskettes contain the following driver:

Intel 852GM VGA drivers for

- ✧ Windows 95/95OSR2
- ✧ Windows 98
- ✧ Windows ME
- ✧ Windows 2000
- ✧ Windows NT
- ✧ Windows XP

The related drivers are stored under the following route:

Driver/Motherboard/PC805_PC806/VGA

For updated system drivers, please have them downloaded from the following website

http://www.intel.com

7.5. Audio Setup

The audio chipset used on PC850/PC855 is **Realtek ALC203**. PC850/PC855 audio driver diskette contains the following drivers:

The Realtek ALC203 audio drivers contain the following drivers:

- Windows 95/95OSR2
- Windows 98
- Windows 2000
- Windows NT
- Windows ME
- Windows XP

The related drivers are stored under the following route:

Driver/Motherboard/PC805_PC806/AUDIO

For updated audio drivers, please have them downloaded from the following website

http://www.realtek.com.tw

7.6. Touchscreen Drivers

The panel PC audio driver diskette contains the following drivers and are stored in the following route:

Driver/Touchscreen Driver

- ✧ Elo resistive/SAW touch driver
- ✧ e-Turbo touch drivers
- ✧ EETI touch drivers
- ✧ Liyitec Resistive Touch

The most updated touch drivers are also downloadable from the following websites:

http://www.elotouch.com or
http://www.eeti.com.tw   or
http://www.eturbotouch.com

7.7. Driver Installation

To install the Ethernet, VGA and Audio drivers, make sure you know the chipset models on the motherboard.

Motherboard Model	PC805/PC806
System Chipset	Intel 852GM
VGA Chipset	Intel 852GM integrated
Ethernet Chipset	Realtek RTL8100B
Audio Chipset	Realtek ALC203

Find the correct drivers from the correct directory and execute the execution files. All the related drivers are stored in the floppy diskettes or the panel PC tool CD under the following route:

Driver/Motherboard/PC805_PC806

Please refer to the readme.txt file under each directory for more drivers' information.

Recent releases of operating systems always include setup programs that load automatically and guide you through the installation.

Appendix

A: LCD Specification

A-1. LP 1500 LCD

The standard display used for the LP 1500 is a AUO M150XN07 or its equivalent.

A-1-1: <u>15.0" AUO M150XN07</u>

M150XN07 is a 15.0" TFT Liquid Crystal Display module with 2 CCFL Backlight units and 20 pins LVDS interface. This module supports 1024 x 768 XGA mode and can display 16.2M colors. The optimum viewing angle is at 6 o'clock direction. The inverter module for Backlight is not built in.

A-1-1-1. SPECIFICATION

Inverter backlight is not included in this LCD module. General specifications are summarized in the following:

ITEM	SPECIFICATION
Active Area (mm)	304.128(H) x 228.096(V) (15.0" diagonal)
Bezel Opening Area (mm)	307.5(H) x 231.4(V)
Pixel Number (pixel)	1024 x R.G.B (W) x 768 (H)
Pixel Pitch (mm)	0.297 (W) x 0.297 (H)
Pixel Arrangement	RGB vertical stripe
Display Color	16.2M colors
Passive Mode	Normally White,TN
Viewing Angle	140/125(Typ.)
Surface Treament	Anti-glare
Response Time	16ms
Color Saturation	65% NTSC
Total Module power(W)	13.3(Typ.)
Brightness (cd/m^2)	250 (cd/m^2)
Contrast Ratio	500:1 (Typ)
Module Weight (g)	1100 g (Typ.)
Backlight Unit	CCFL,2 tables,edge-light(top/buttom)

B: DiskOnChip® Installation

The LP 1500 120/150 (M/F) is equipped with an internal flash disk which can emulate a floppy disk drive by adapting DiskOnChip® memory chips from 2MB to 144MB capacity, and the flash disk is fully compatible with floppy disk format of MS-DOS system.

To install a DiskOnChip® memory to the provided socket, follow the instructions below;

1. Make sure the computer is turned off

2. Insert the DiskOnChip® memory device into the onboard socket. Make sure that pin 1 of the DiskOnChip® is aligned with the pin 1 of the socket.

3. Power up the computer

4. During the power up, the DiskOnChip® drivers will be automatically loaded into the system memory.

5. At this time, the DiskOnChip® can be accessed as any disk drive.

6. If it is the only disk in the system, it will appear as the first drive, drive C:.

7. If there are more drives already attached to the system, then by default, the DiskOnChip® will appear as the last drive unless specially programmed.

8. If the DiskOnChip® is to be bootable, then follow the steps below

    a. Use DOS command to copy the operating files into the DiskOnChip®

    b. The DiskOnChip® is to be configured as the first drive, drive C: in the system. Use the DUPDATE utility.

        DUPDATE D /S: DOC104.EXB /FIRST (set as c:)

        DUPDATE C /S: DOC104.EXB (set as d:)

For more information and for the latest software utility and utilities manual on the DiskOnChip®, visit M-System website at www.m-sys.com .

C: System I/O Ports

Address range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8024 keyboard controller
070-07F	Real time clock, non-maskable interrupt mask (NMI)
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Game Port (not used)
443	Watchdog timer
143	Watchdog timer
208	DIO port
2E8	Serial port #4
2F8-2FF	Serial port #2
300-31F	Prototype card (not used)
330-331	MPU-401 Compatible
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT1)
380-38F	SDLC, bisynchronous 2 (not used)
3A0-3AF	Bisynchronous 1 (not used)
3B0-3BF	Monochrome display and printer adapter (LPT1) (not used)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3E8	Serial port #3
3F0-3F7	Diskette controller
3F8-3FF	Serial port #1

D: Wake-On-LAN

The Wake-On-LAN is a remote management tool with the advantage to reduce system management workload. It provides the capability to remotely power on the client computers supporting Wake-On-LAN by simply sending a "wake up packet". After powering up the client systems, the user is able to monitor the remote systems' status and to upload or download files to or from the clients. With this feature, MIS persons can flexibly perform client maintenance during off-hours; the Total Cost of Ownership (TCO) will be thus lowered.

To use Wake On LAN function, the client system must have a network card with chipset that supports the Wake-On-LAN and an ATX power supply meeting 2.01 with at least 720mA standby current is also required to support the Ethernet card for this function. The LP 1500 is a panel PC system with these two features. To use the LP 1500 Wake-On-LAN function, please refer to the following;

1. **Download the "Wake up packet**",
PCnet Family Software Magic Packet Utility. This utility is downloadable from AMD website at

http://www.amd.com/us-en/Networking/ProductInformation/0,,50_2330,00.html

Or refer to the **Magic Packet™ Technology** at AMD website for how to write your own wake-up program.

http://www.amd.com/us-en/Networking/TechnicalResources/0,,50_2334_2481,00.html
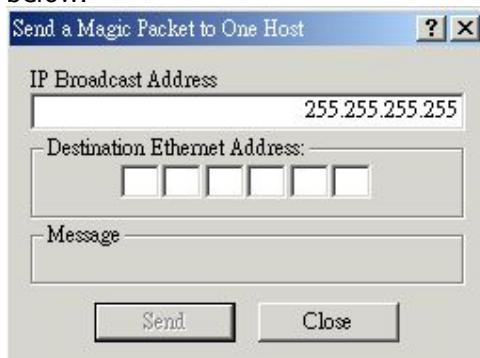
2. **BIOS Setting**
Enter the *POWER MANAGEMENT SETUP**PM WAKE UP EVENTS* to enable the *MACPME POWER UP CONTROL*

3. Wake up Packet

To use the AMD's Magic Packet, program installation is not needed. Just open the MAGPAC.EXE, then the following screen will pop up.
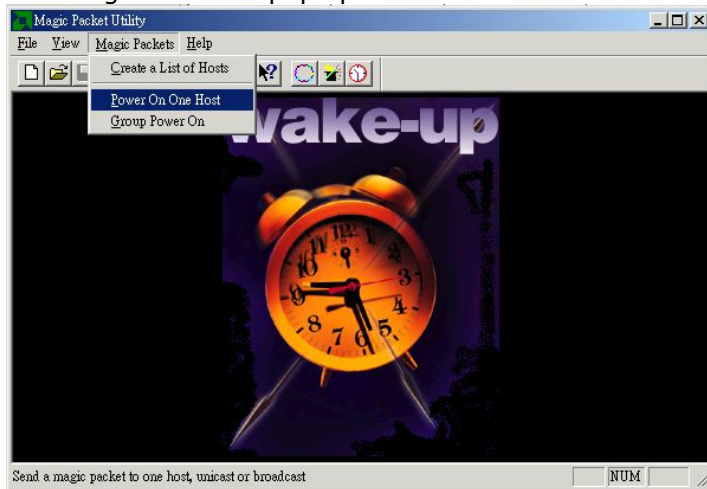
The remote computer can be waken up by selecting the *MAGIC PACKETS | POWER ON ONE HOST* as shown below.

Do not change the *IP BROADCAST ADDRESS*. The *DESTINATION ETHERNET ADDRESS* is to be filled in with the Ethernet card's MAC address.

To obtain the Ethernet card MAC, under Windows 9x, just enter $S{\tiny TART}\backslash R{\tiny UN}$ to open the *winipcfg.exe*, then the following screen will pop up. If the OS is Windows NT 4.0 or 2000 or XP, then you need to enter DOS mode to run *ipconfig.exe* to obtain the MAC.
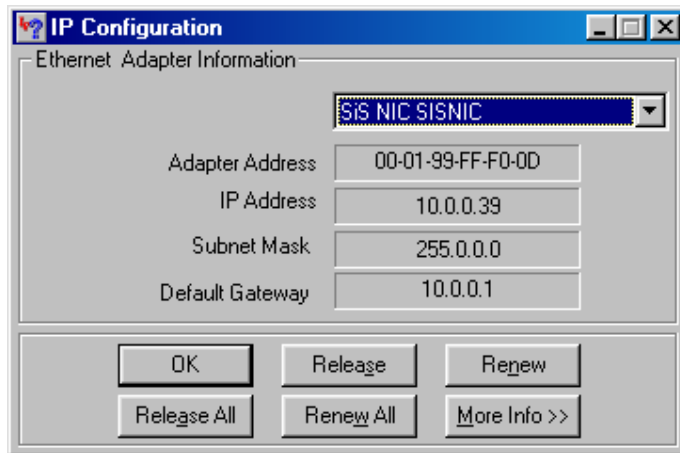
The adapter address is the LAN card's MAC address.

4. After obtaining all the above information, the remote computer can be powered on now.

Now you can use *Desktop On Call* or other remote software to control the remote computer.

E: First MB Memory Map

Address range (Hex)	Device
F000h-FFFFh	System ROM
CC00h-EFFFh	Unused
C000h-CBFFh	Expansion ROM
B800h-BFFFh	CGA/EGA/VGA text
B000h-B7FFh	Unused
A000h-AFFFh	EGA/VGA graphics
0000h-9FFFh	Base memory

F: Power Supply

The LP 1500 120/150 (M/F) can either accommodate an AC power supply 250W or a AC power supply 120W.

- ATX250W ,
  INPUT range : 100~240V/5~3A @50~60Hz
- ATX120W
  INPUT range : 100~240V/1.2A @50~60Hz