

APOLLO 120 /150 III
12.1"/15.1" TFT Intel®
Celeron/Pentium® III
Plastic-housing Panel PC with
Versatile Stand design

User's Manual (Version 2207)



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Unpacking

After unpacking the **APOLLO 120/150 III** carton, check and see if the following items are included and in good condition.

- ◆ **APOLLO III main system** x 1
- ◆ Accessories
 - Power cord (90°) x 1
 - External FDD cable (optional) x 1
 - External 5V/12V DC power cable (optional) x 1
 - Utilities & drivers & user manual CD diskette x 1
(for touchscreen drivers, please download the updated drivers from the following website
<http://www.3m.com> or
<http://www.elotouch.com>)
 - Base knob with rubber cushion x 1
 - Panel mounting kit (optional) x 1 set

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 manufactured by the Manufacturer. are warranted against defective materials and workmanship for one year starting from the date of delivery to the original purchaser. However, warranty or service will not be extended if 1). the product is repaired, modified or altered unless such repair, modification or alteration is authorized by the Manufacturer; or 2). the product serial number or warranty label is defaced or missing; or 3). the product is not properly used.

Important Safety Precautions

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

1. Turn off the computer before cleaning. Clean with a damp or dry cloth only. Do not spray any liquid cleaner on screen directly.
2. The power outlet socket used to plug in the computer 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.
3. Make sure the voltage of the power source is correct before connecting the computer to the power outlet.
4. If the computer 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.
5. Do not expose the power cord, extension cord and power outlet to moisture.
6. Install the computer on a reliable surface to prevent damage caused by dropping.
7. This computer is not equipped with an operating system. An operating system must be loaded first before installing any software into the computer.
8. Disconnect the power cord from the computer before any installation. Make sure both the computer and the external devices are turned off. The sudden surge of power may ruin any sensitive components. Also make sure the computer 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 computer enclosure are for the cabin ventilation to prevent the computer 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. If the computer is equipped with a touch panel, avoid using sharp objects to operate the touch panel. Scratches on the touch panel may cause mal-calibration or non-function to the panel.
13. The LCD panel display is not subject to shock or vibration. When assembling the computer, make sure it is securely installed.

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1. INTRODUCTION

This chapter provides background information and detail specification on the APOLLO 120/150 III. 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.

The **APOLLO 120/150** is a 12.1"/15.1" TFT Intel Celeron/Pentium III/Pentium IV plastic-housing multimedia panel PC system. With a 150W ATX power supply as its engine, the APOLLO is a genuine P4 panel PC designed for high performance multimedia application. Featuring with versatile stand design for different environmental applications, the APOLLO itself can be used as a ready-to-play system by connecting to necessary peripherals. By integrating the APOLLO system to the special designed **HERCULUS KIOSK**, the complete system is widely used for KIOSK integration. It also provides 2 sets of VESA holes for market-available swing arms for mobile application. Also with the availability of both **AC** and **DC** systems, the APOLLO is the best turnkey solution platform for any system integration.

In terms of panel size, the APOLLO has 12.1" and 15.1" systems. In terms of system engine, the APOLLO also have two versions, one **APOLLO III**, Celeron/Pentium III system and the other **APOLLO IV**, Pentium IV system. To upgrade the system, simply replace the motherboard.

Fully configurable and with its sleek outlook, the **APOLLO** is an ideal platform for any space-constricted application.

1.2. What Covers in this Manual

This handbook contains most information you need to set up and use the APOLLO III system. 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 APOLLO 120/150 III.

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

Chapter 3 details the panel PC's various standing and mounting options by graphical illustrations.

Chapter 4 provides the procedures to connect external devices to the I/O interface

Chapter 5 helps you to recognize the APOLLO 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 6 provides detail information of the jumper settings and connector signals of the system control board.

Chapter 7 explains the AWARD BIOS setup.

Chapter 8 introduces the Ethernet, XGA and audio drivers.

Chapter 9 details the procedures to install the touchscreen software drivers under DOS and Windows operation

Appendix A details the 12.1"/15.1" LCD specifications.

Appendix B introduces the DiskOnChip® installation.

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

APOLLO: 12.1"/15.1" TFT Intel® Celeron/Pentium® III & Pentium IV Plastic-housing Panel PC with *Versatile* Stand design

SYSTEM

Flat Panel

- ◆ **APOLLO 120:** 12.1" color TFT, 800*600
 - Viewing angle 100
 - Luminance (cd/m²) 150 or above
 - Simultaneous mode yes
- ◆ **APOLLO 150:** 15.1" color TFT, 1024*768
 - Viewing angle 120
 - Luminance (cd/m²) 200 or above, optional high-luminance model
 - Simultaneous mode yes

CPU (Socket 370)

- ◆ Intel Pentium III FCPGA 1GHz/133MHz
- ◆ Intel Pentium III FCPGA 650-933/133MHz
- ◆ Intel Pentium III FCPGA 500E-850E/100MHz
- ◆ Intel Celeron FCPGA 800MHz-1.10GHz/100MHz
- ◆ Intel Celeron FCPGA 533AMHz-766MHz/66MHz
- ◆ Intel Celeron PPGA 300A-533MHz/66MHz

System Chipset

- ◆ SiS 630ST

System BIOS

- ◆ Award PnP Flash BIOS

System Memory

- ◆ 1*168pin DIMM socket supporting SDRAM up to 512MB

L2 Cache

- ◆ CPU built-in

Standard I/O

- Serial ports*4: COM 1, 2 & 4 with +5V/12 power output on pin #9, COM 3 internal type reserved for touchscreen, COM2 RS-232/485 jumper selectable
- Parallel Port*1: supports SPP/EPP/ECP
- External FDD Interface*1
- +5V/+12V DC-out*1
- PS/2 Keyboard Interface*1
- PS/2 Mouse Interface*1
- DIO: Input*2, output*2
- USB Interface*2
- VGA Interface*1
- Brightness VR*1
- Speaker-out, MIC-in, Line in

Ethernet

- ◆ 100/10 Base-T Ethernet with RJ-45 phone jack
- ◆ Supports WAKE-ON-LAN

Watchdog Timer

Display

- ◆ Integrated 2D/3D graphics engine, 4X AGP
- ◆ Share system memory architecture able to utilize the display memory size up to 64MB
- ◆ Supporting LCD/VGA dual display mode (under Windows 98 and Windows ME and Windows XP)

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, Line-In
- ◆ 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)

Expansion Slot

- PCI*2 or PCI*1 + ISA*1
- Expansion card size (L*W)
- PCI card: max. 190*120 mm
- ISA card max. 190*120 mm if no internal FDD is installed; 170*120 mm if internal FDD is installed

Front Bezel

- LED indicators for HDD, LAN, POWER
- Motion sensor or IrDA receiver or Wireless keyboard receiver (optional)

PERIPHERAL & STORATE DEVICES

Touchscreen (optional, sharing COM3)

- ◆ 12.1"/15.1" analog resistive type with RS-232 controller
- ◆ 12.1"/15.1" capacitive type with RS-232 controller
- ◆ 12.1"/15.1" surface acoustic wave type (SAW)

Power Supply

- ◆ ATX 150W, input range: 100~240V/5A @60Hz,
200~240V/2.5A @50Hz
- ◆ DC 150W, 20~28VDC, 40~56VDC or DC 200W, 36~72VDC
(optional)

Speakers

- ◆ Water-proof speakers*2

CD-ROM or CD-RW or DVD-ROM

- ◆ Slim type*1 (optional) or
- ◆ External type via USB

Floppy Disk Drive

- ◆ Slim type*1 (optional) or
- ◆ Via external FDD or
- ◆ External type via USB

Hard Disk Drive

- ◆ 3.5" HDD*1 (optional)

MECHANICAL & ENVIRONMENTAL

Construction

- ◆ Inside: heavy-duty steel
- ◆ Outside: fire-proof resilient ABS/PC plastic

Color (standard)

- ◆ Beige
- ◆ Black

Dimension (chassis only, unit: mm)

- ◆ APOLLO 120: 368*321*116.5 (L*W*D);
334.7*284.21 (for panel mount)
- ◆ APOLLO 150: 406*360*129 (L*W*D);
384*284.2 (for panel mount)

Mounting

- ◆ Panel mount with mounting kits
- ◆ Wall mount with swing arm: standard VESA mounting holes (75*75 mm)

Versatile Stand

- ◆ 45~90° free standing
- ◆ Avocado-shape holes for fixed standing
- ◆ Cable Management design

- *Specifications are subject to change without notice.*

1.4. Dimensions

1.4.1. APOLLO 120

The APOLLO 120' s chassis size is shown below. This does not include the dimension of the stand. This does not include the dimension of the stand.

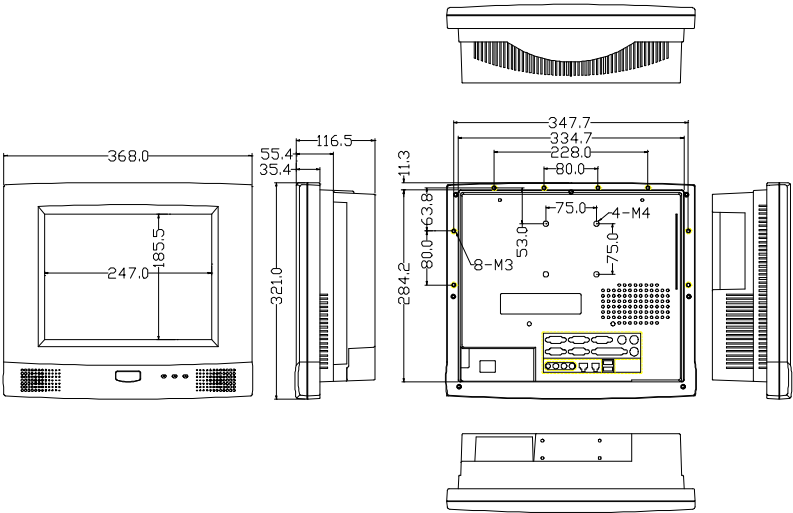


Figure 1-1: APOLLO 120 DIMENSION

2. USING THE SYSTEM

- ◆ Identifying the APOLLO 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 APOLLO 120/150.

2.1.1. Front View

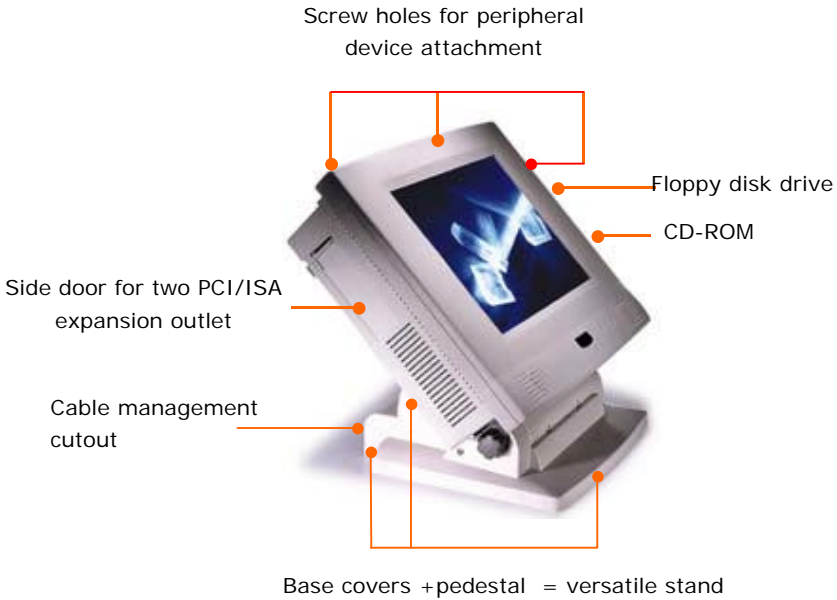
When the APOLLO 120/150 is put upright on the desktop with the provided pedestal, its front view appears as below.

The illustrations of the APOLLO 120/150 may differ slightly because the APOLLO system series has two different LCD size: 12.1" & 15.1".



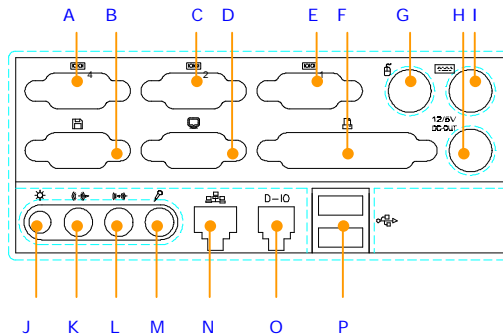
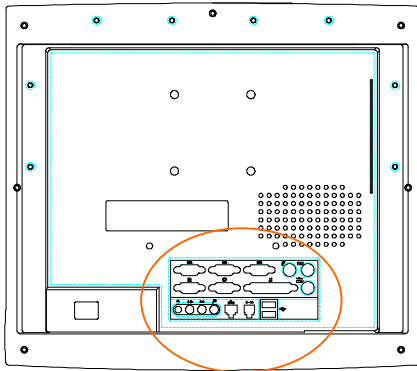
2.1.2. Side Views

The left side of the panel PC appears as below:



2.1.3. I/O Outlets

When you turn around the APOLLO system, you will find the power switch and all the I/O ports are located at the rear cover of the panel PC.



- | | | |
|------------------|---------------------|------------------|
| A. COM 4 | B. EXTERNAL FDD | C. COM 2 |
| D. VGA PORT | E. COM 1 | F. PRINTER PORT |
| G. PS/2 MOUSE | H. +5/12V DC-OUT | I. PS/2 KEYBOARD |
| J. VR BRIGHTNESS | K. SPEAKER-OUT | L. LINE-IN |
| M. MIC-IN | N. ETHERNET (RJ-45) | O. 2-CHANNEL DIO |
| P. USB*2 | | |

2.2. System Setup for the First-time Use

To set up the APOLLO 120/150 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
- ◆ PS/2 or AT keyboard or wireless keyboard
- ◆ PS/2 or serial mouse

2.2.1. Installation Procedures

The APOLLO system can be powered either by an AC electrical outlet (100~240V/5A @60Hz, 200~240V/2.5A @50Hz) or by DC power source (20~28VDC or 40~56VDC or 36~72VDC). 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 female end of the power cord to the AC inlet located at the rear bottom side of the panel PC.
2. Connect the 3-pin male end of the power cord to an electrical outlet.
3. Connect a PS/2 keyboard or an AT keyboard to keyboard port. If you are using an AT keyboard, you need an adapter (AT to PS/2 KB) for this connection.
4. Connect the PS/2 mouse to the PS/2 mouse port. If you are using a serial mouse, it can be connected to the COM port.
5. Turn on the main switch on the power supply if there is one.
6. Power on the panel PC by switching the power switch located at the rear bottom side.

2.2.2. Running the BIOS Setup

If you are a commercial user, the APOLLO 120/150 III 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 APOLLO III 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 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 APOLLO III 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 external FDD or internal FDD
2. Via the CD-ROM
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 APOLLO III system provides the following utility drivers stored in the CD-ROM diskette or utilities diskettes;

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

3. VERSATILE STANDING & MOUNTING OPTIONS

The APOLLO 120/150 is designed for universal standing and mounting to fit into various environmental applications. This chapter highlights the steps of different mounting options with graphical illustrations. Sections include

- ◆ Versatile Stand
- ◆ Wall Mounting
- ◆ Panel Mounting

3.1. Versatile Stand

The APOLLO comes with a versatile and functional stand, able to fit into different environmental application.

3.1.1. Standing Upright

Compact in its size, all-in-one in its design along with its industrial-grade reliability, the APOLLO system standing upright is the best replacement for a desktop computer. When the APOLLO is to stand upright, the two base back covers can either be assembled or not to be assembled to the pedestal.

However, if the APOLLO system is to stand upright while the touchscreen is also frequently used, then it is suggested that the two base back covers and another knob are assembled with the pedestal to prevent possible wobbling when the touchscreen is being used.

3.1.2. 45 to 90° Free Standing

The sleek and sturdy pedestal assembled with the two cable management covers enables the APOLLO system to endure the long-time operation in any public sectors. By swiveling the knob on the left side of the base cover and pulling the base up and down, the angle can be adjusted from 45 to 90°.

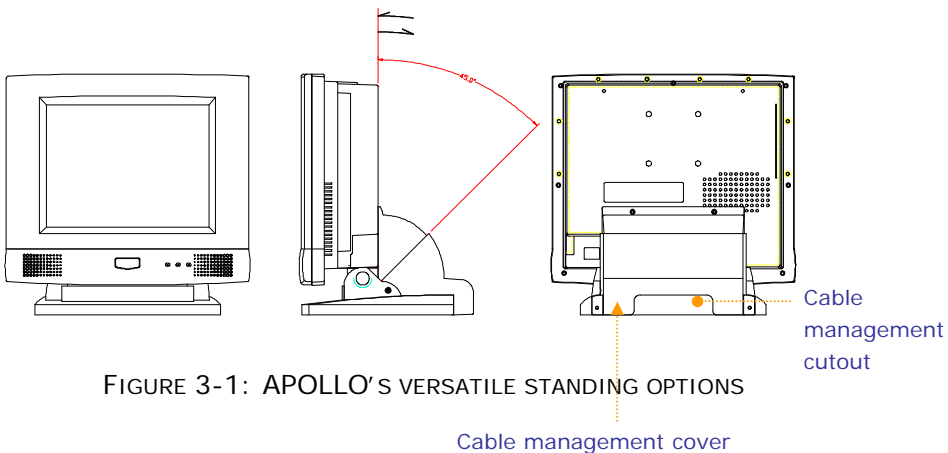


FIGURE 3-1: APOLLO'S VERSATILE STANDING OPTIONS

3.1.4. Cable Management

The APOLLO's pedestal is not only a versatile stand but a functional stand able to manage the system cabling.

1. The rectangle-shape opening (Fig. 3-2) at the bottom side of the big pedestal can act as a cable management cutout. All the cables connecting to the I/O ports can come out from this opening, then down to the table.
2. The two base back covers (Fig. 3-1) can act as a set of cable management covers. All the cables connecting to the I/O ports come down in the covers, then out from this opening at the rear side of the base.

3.2. Wall Mounting and Mobile Applications

The APOLLO system provides 1 set of VESA mounting holes, 75*75mm on the rear side of the chassis. System integrators can design their special wall mount brackets per the two sets of VESA holes or obtain market-available swing arms for wall mounting, table mounting or mobile applications.

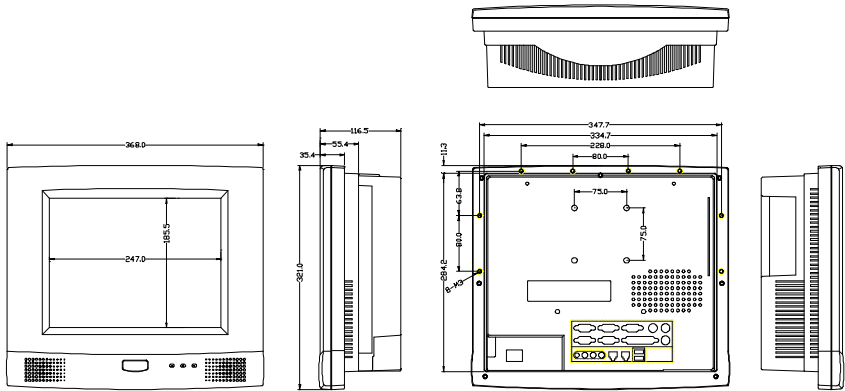


FIGURE 3-4: APOLLO 120 VESA HOLES

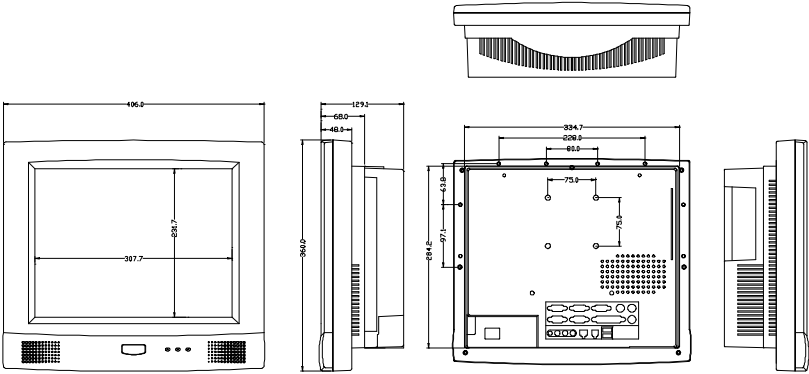


FIGURE 3-5: APOLLO 150 VESA HOLES



FIGURE 3-6



FIGURE 3-7

3.3. Panel Mounting

The APOLLO 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.

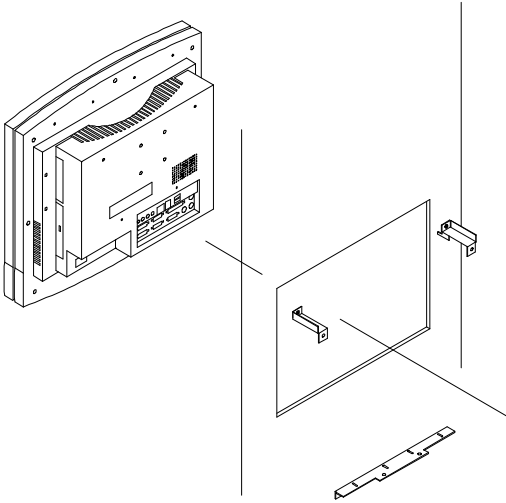


FIGURE 3-8

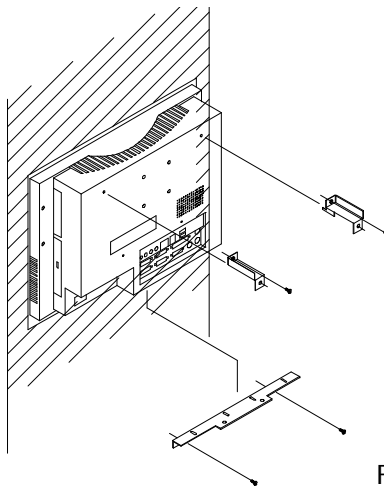


FIGURE 3-9

3.4. KIOSK Integration

The APOLLO system can also be integrated to a KIOSK cabinet to make a ready-to-play KIOSK terminal. The following is an example of APOLLO KIOSK. It is a flexible and robust device that can be mounted virtually anywhere and in any forms including tabletop, pedestal, pole and wall mounting.



FIGURE 3-10: APOLLO KIOSK ILLUSTRATION

4. I/O CONNECTION

This chapter describes the APOLLO 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.

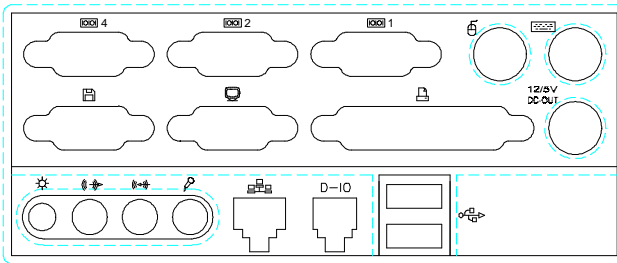


FIGURE 4-1

4.1. Parallel Port

The APOLLO 120/150 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 APOLLO 120/150 III 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.

4.2. COM Ports x 4

The APOLLO 120/150 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 jumper setting. For COM 2 RS-232/422/485 selection, please refer to SEC. 6.1.2.

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. The IO is the signal board attached to the rear panel with 2 SCSI cables linking to the system motherboard to connect the onboard signal out to the external I/O ports.

Please refer to SEC. 6.2.2 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;

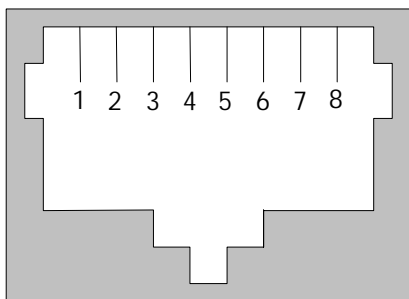
1. Turn off the APOLLO system and the serial devices.
2. Attach the interface cable of the serial device to the 9-pin D-SUB serial connector. Be sure to fasten the retaining screws.
3. Turn on the computer and the attached serial devices.
4. Refer to the serial device's manual for instruction to configure 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, the related onboard jumpers have to be set correctly first. Refer to section 6.1.4.3 for the RS-232/422/485 jumper settings.

4.3. 100/10 Base-T Ethernet (RJ-45)

The APOLLO 120/150 provides a 100/10 Base-T NE2000 compatible Ethernet (RJ-45) interface. For network connection, follow the instructions below.

1. Turn of the APOLLO 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

4.4. VGA Interface

The APOLLO 120/150 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.

4.5. 2nd Display Graphic Support Mode

The APOLLO can support *SINGLE DISPLAY MODE* and *DUAL DISPLAY MODE*. For dual display mode, it can support *MIRROR MODE* (same screen) or *MULTIPLE-MONITOR MODE* (different screens). *PLEASE NOTE THAT THE MULTIPLE-MONITOR MODE ONLY WORKS WHEN THE OPERATING SYSTEM IS WINDOWS 98 OR WINDOWS ME OR WINDOWS XP.*

The APOLLO itself is onboard with an AGP LCD/VGA controller. When dual display mode is activated, it can support a LCD panel (digital TTL) and a CRT or an analog monitor at either mirror mode or multiple-monitor mode.

The following sections describe all the graphic support modes based on system memory clock frequency (66MHz, 100MHz and 133MHz). All these tables apply only to video memory size is equal or larger than 8MB.

4.5.1. When System Memory Clock = 66MHz

The following tables contain all graphic support modes under the following condition and are classified under three output modes (single mode, mirror mode and multiple-monitor mode).

System memory clock = 66MHz

Memory bus width = 64 bit

Video memory size = 8MB or above

4.5.1.1. Single Display Mode

Resolution	Bpp	CRT1	LCD
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100, 120, 160	60, 70, 75
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	32	56, 60, 72, 75, 85, 100, 120	60, 70, 75
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	32	43, 60, 70, 75	
1280*1024	8	43, 60, 75, 85	60
	16	43, 60, 75, 85	
	32	43	
1600*1200	8	60, 65, 70, 75, 85	
	16	60	
	32		
1920*1440	8	60	
	16		
	32		

4.5.1.2. Mirror Display Output Mode

When LCD is selected as secondary display at mirror mode:

Resolution	Bpp	CRT1 at mirror mode	LCD at mirror mode
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100	60
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120	60, 70, 75
	32		
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16		
	32		

4.5.1.3. Multiple Display Output Mode

When LCD is selected as secondary display at multiple-monitor mode:

Resolution	Bpp	CRT1 at MM mode	LCD at MM mode
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100	60
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120	60, 70, 75
	32	56, 60	
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16	43, 60, 70, 75	
	32	43	
1280*1024	8	43, 60, 75, 85	
	16	43	
	32		
1600*1200	8	60, 65	
	16		
	32		

4.5.2. When System Memory Clock = 100MHz

The following tables contain all graphic support modes under the following condition and are classified under three output modes (single mode, mirror mode and multiple-monitor mode).

System memory clock = 100MHz

Memory bus width = 64 bit

Video memory size = 8MB or above

4.5.2.1. Single Display Mode

Resolution	Bpp	CRT1	LCD
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	32	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	32	43, 60, 70, 75, 85, 100	60, 70, 75
1280*1024	8	43, 60, 75, 85	60
	16	43, 60, 75, 85	60
	32	43, 60	
1600*1200	8	60, 65, 70, 75, 85	
	16	60, 65, 70, 75, 85	
	32		
1920*1440	8	60	
	16	60	
	32		

4.5.2.2. Mirror Display Output Mode

When LCD is selected as secondary display at mirror mode:

Resolution	Bpp	CRT1 at mirror mode	LCD at mirror mode
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100, 120, 160	60, 70, 75
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	32	56, 60, 72, 75, 85	60
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	32		

4.5.2.3. Multiple Display Output Mode

When LCD is selected as secondary display at multiple-monitor mode:

Resolution	Bpp	CRT1 at MM mode	LCD at MM mode
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100, 120, 160	60, 70, 75
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	32	56, 60, 72, 75, 85	60
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	32	43, 60	
1280*1024	8	43, 60, 75, 85	
	16	43, 60, 75	
	32		
1600*1200	8	60, 65, 70, 75, 85	
	16		
	32		
1920*1440	8	60	
	16		
	32		

4.5.3. When System Memory Clock = 133MHz

The following tables contain all graphic support modes under the following condition and are classified under three output modes (single mode, mirror mode and multiple-monitor mode).

System memory clock = 133MHz

Memory bus width = 64 bit

Video memory size = 8MB or above

4.5.3.1. Single Display Mode

Resolution	Bpp	CRT1	LCD
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	32	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	32	43, 60, 70, 75, 85, 100, 120	60, 70, 75
1280*1024	8	43, 60, 75, 85	60
	16	43, 60, 75, 85	60
	32	43, 60, 75, 85	60
1600*1200	8	60, 65, 70, 75, 85	
	16	60, 65, 70, 75, 85	
	32	60	
1920*1440	8	60	
	16	60	
	32		

4.5.3.2. Mirror Display Output Mode

When LCD is selected as secondary display at mirror mode:

Resolution	Bpp	CRT1 at mirror mode	LCD at mirror mode
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	32	56, 60, 72, 75, 85, 100, 120	60, 70, 75
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	32		

4.5.3.3. Multiple Display Output Mode

When LCD is selected as secondary display at multiple-monitor mode:

Resolution	Bpp	CRT1 at MM mode	LCD at MM mode
640*480	8	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	16	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
	32	60, 72, 75, 85, 100, 120, 160, 200	60, 70, 75
800*600	8	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	16	56, 60, 72, 75, 85, 100, 120, 160	60, 70, 75
	32	56, 60, 72, 75, 85, 100, 120	60, 70, 75
1024*768	8	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	16	43, 60, 70, 75, 85, 100, 120	60, 70, 75
	32	43, 60, 70, 75	
1280*1024	8	43, 60, 75, 85	
	16	43, 60, 75, 85	
	32	43	
1600*1200	8	60, 65, 70, 75, 85	
	16	60, 65	
	32		
1920*1440	8	60	
	16		
	32		

4.6. PS/2 Keyboard Interface

The APOLLO provides a standard PS/2 keyboard connector located at the rear panel. If the user would like to use AT keyboard, then an adapter to connect the PS/2 KB to AT KB is needed.

4.7. PS/2 Mouse Interface

The APOLLO system has one PS/2 mouse connector located at the rear side. A simple plug-in will make the connection.

4.8. External FDD (DB-15)

The APOLLO 120/150 provides two ways to connect to a floppy disk drive to fit into specific environmental applications:

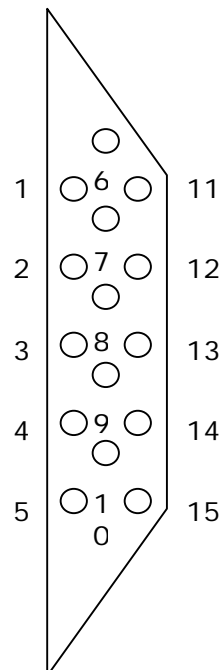
1. Internal FDD
2. External FDD

If the FDD is frequently used, it is suggested to use an internal floppy disk drive. If the drive is used only for system installation or maintenance, then, an external device can fulfill this need and is more economical. Please note that if an internal floppy disk drive already exists, no external floppy drive can be used.

The APOLLO external FDD interface is a 15-pin D-sub connector located at the rear side of the chassis. An external FDD cable is provided to connect a standard 3.5" FDD to the system. Its pin position and pin assignment are listed as follows.

Pin #	Signal	Pin #	Signal
1	DELSEL	9	-WD
2	-INDEX	10	-STEP
3	-MTR1	11	-RD
4	-DVR1	12	-HDSEL
5	-DIR	13	-DSKCHG
6	-WP	14	+5V
7	-TRKO	15	+12V
8	-WG		

The APOLLO system is equipped with a +5V/12V DC-out connector to provide 5V power to drive the external floppy disk drive. Use the provided FDD power cable to connect the floppy drive to the 5V DC-out connector when an external floppy drive is attached to the system.



4.9. +5V/12V DC-Out

The APOLLO system provides a +5V/12V DC-out connector. It is used to provide necessary power source for some external devices. For example, if the APOLLO III system is to be housed in a KIOSK cabinet which requests extra cooling fan for heat dispensing, then the fan power cable can be attached to 5V/12V DC-out to obtain power from the computer directly. If an external floppy disk drive is attached to the system, it will need +5V power source from the system. A power cable for the external floppy disk drive is already provided for this connection. For other devices, you might need to make your own power cable for the connection.

4.10. VR Brightness Control

The APOLLO 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.

4.11. DIO (Digital Input & Output)

The APOLLO III 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;

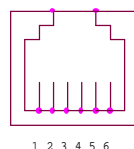
I/O Port address: 208H

Read: SD0, SD1

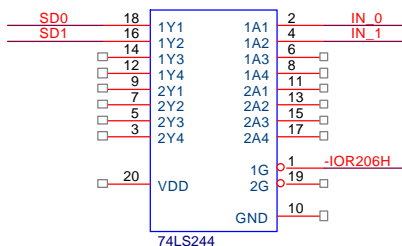
Write: SD4, SD5

DIO1

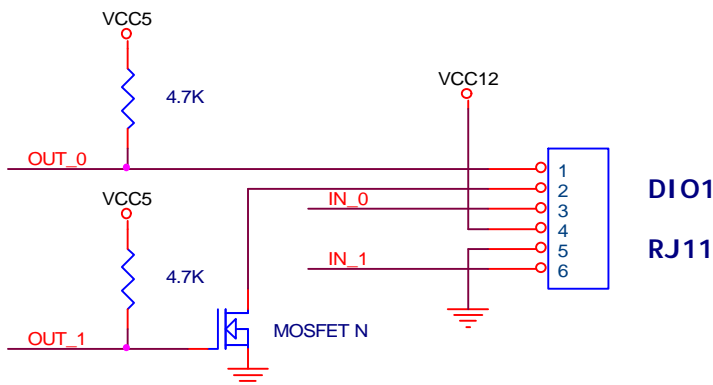
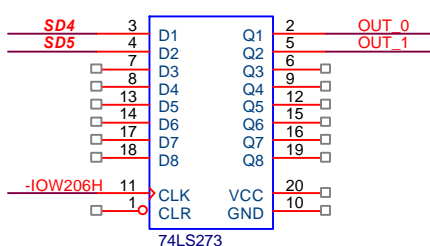
RJ11



IO 208H(READ)



IO 208H(WRITE)



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

4.12. Audio Interface (Line-in, MIC-in, SPK-out)

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

The microphone-in jack is used to record sound or voice by connecting to an external microphone. The line-in jack is used to input audio from an external audio device such as a CD player, tape recorder or a radio. 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.

4.13. USB Ports

The APOLLO 120/150 III also provides two 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.

4.14. IR Keyboard Sensor (optional)

The APOLLO III features with an optional IR keyboard sensor. The IR KB sensor containing wireless KB firmware is located at the front bezel. To use the wireless keyboard, please note that the APOLLO III IrKB sensor on the front bezel and the wireless keyboard sensor have to face each other at the same horizontal level and the distance of the IR transceiver and receiver should not exceed 1 meter.

4.15. AC/DC Inlet/Power Switch

For APOLLO 120/150 III AC system, it can operate in the input range from 100 ~ 240 volts, 50 ~ 60 Hz. For DC system, the input range can be from 18V to 72V with different power supply.

5. HARDWARE INSTALLATION AND UPGRADE

This chapter overviews the installation of the APOLLO III's internal components and devices. Sections include:

- ◆ The exploded diagram
- ◆ Motherboard assembly
- ◆ LCD module assembly
- ◆ HDD module assembly
- ◆ CD-ROM/FDD assembly
- ◆ Power module assembly
- ◆ Expansion slots

The APOLLO 120/150 III consists of a Celeron/ Pentium® III multimedia motherboard with an adequate CPU and relevant SDRAM on it. The system control board and other internal devices such as expansion card, HDD 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, SDRAM, HDD, internal FDD, CD-ROM and power supply can be easily accessed for maintenance and upgrade.

The APOLLO is composed of 9 major modules. The installation procedure is also listed as below.

1. Motherboard module
2. HDD module
3. LCD module
4. Front bezel module
5. CD-ROM module
6. Power supply module
7. Expansion slot module
8. Back panel module
9. Stand module

To disassemble the system module for maintenance, the procedure is from step 9 to 1.

5.1. Recognizing the System Major Parts

In terms of LCD size, the APOLLO has two models, one 12.1" and the other 15.1". The assembly of the two models is basically the same except the LCD assembly. The following diagram highlights the system major parts that make up the APOLLO 120 main system.

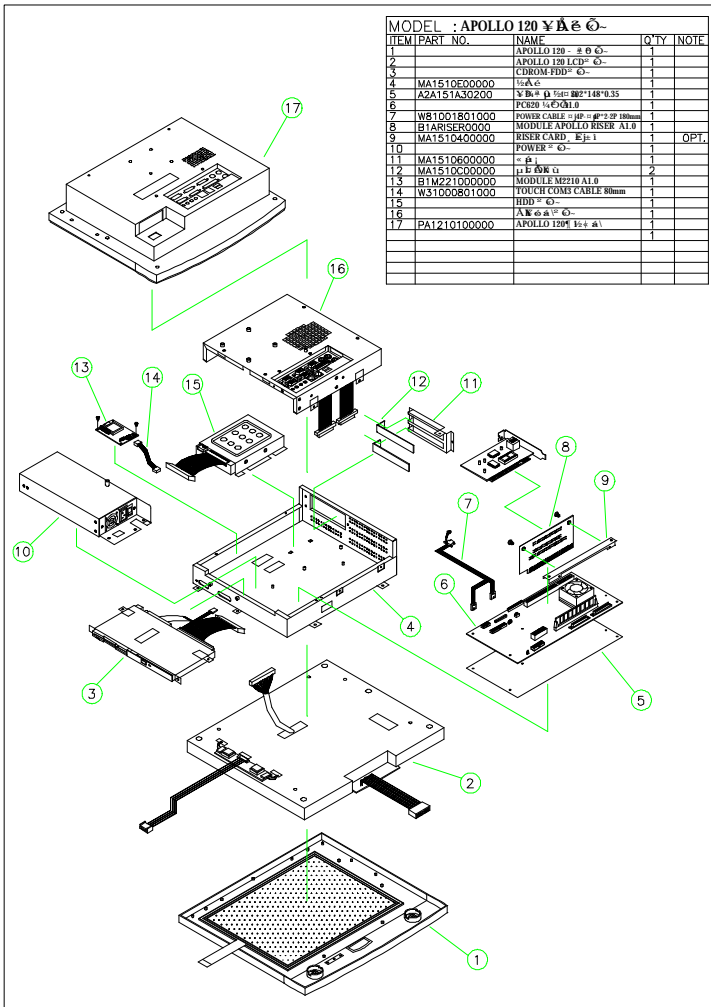


FIGURE 5-1: APOLLO 120 EXPLODED DIAGRAM

The following diagram shows the system major parts that make up the APOLLO 150 main system.

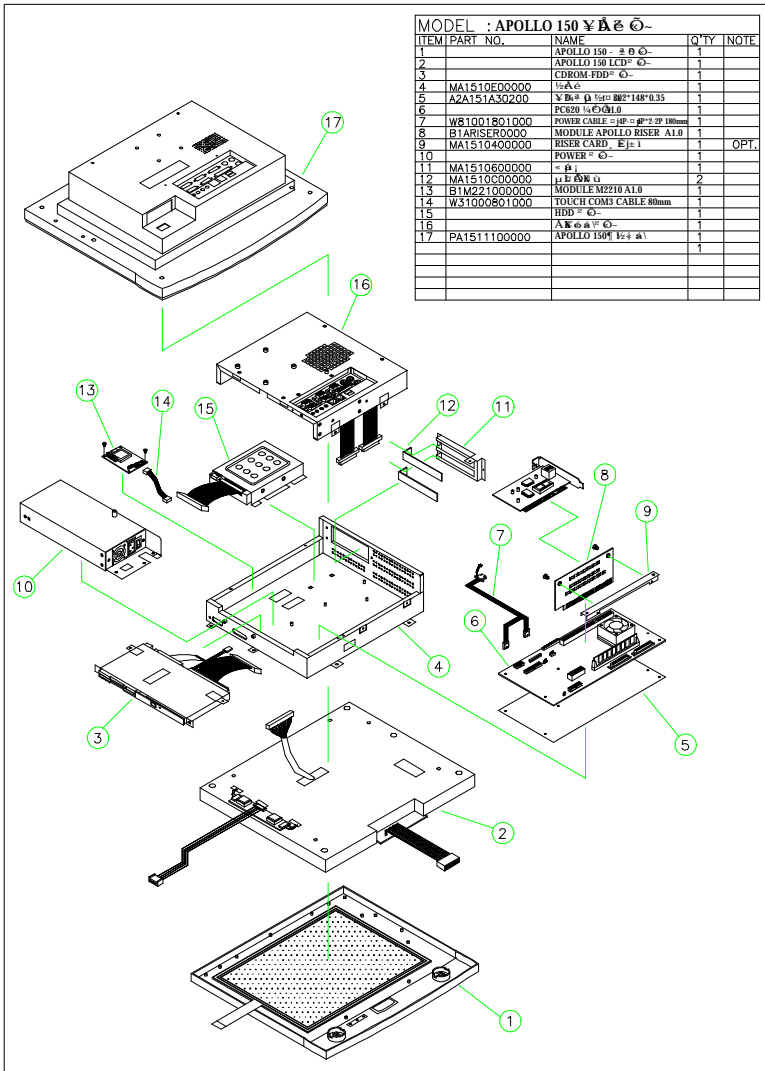


FIGURE 5-2: APOLLO 150 EXPLODED DIAGRAM

5.2. Installing the CPU

The APOLLO III can adapt Socket 370 Intel® Celeron® or Pentium III CPU. Upgrading the CPU can increase the system performance. When Pentium III 1GB 133MHz is used with the system, it is suggested to attach another system cooling fan at the right side of the system compartment to prevent the system from overheating.

The APOLLO's motherboard provides one 370-pin ZIF socket (Socket 370). 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 insert 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 cable. Connect the power cable to the 3-pin power connector on the motherboard.
5. There are two white clips on the CPU socket. Make sure the cooling CPU fan clips click into place.

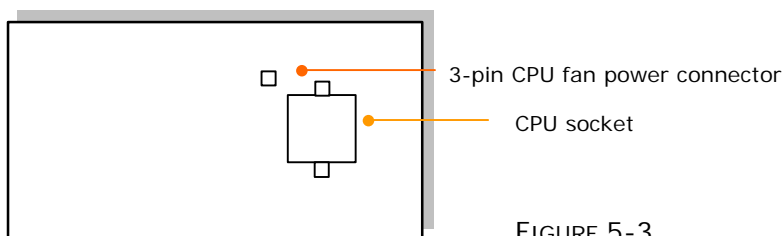


FIGURE 5-3

5.3. Installing the SDRAM Memory Module

The APOLLO 120/150 III system control board provides 1 x 168-pin DIMM socket, able to support SDRAM memory from 32MB up to 512MB. To install the memory module, follow the instructions below.

1. Find the 168 pin DIMM socket on the motherboard
2. There are two white eject levers at each end of the DIMM 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 DIMM 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.

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 SDRAM MHz. Inadequate memory module will make the computer unable to boot up.

5.4. 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 SDRAM are already properly installed to the motherboard before the motherboard is attached to the system chassis. (Refer to Sec. 5-2 and 5-3 for CPU and SDRAM installation).

1. The lower side of the chassis has a rectangle opening at the bottom of the chassis. Make the lower side of the chassis to be near you.
2. From your point of view, the motherboard module is to be installed to the lower side of the system compartment.
3. Tape the motherboard insulator (5) (Fig. 5-1 & 5-2 (5)) to the motherboard (6) 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.
4. Fix the motherboard (6) to the chassis with 7 round-head anti-fallen 3*6 screws.
5. The IR/LED cable (Fig. 5-7 (7) & Fig. 5-8 (5)) has to go through the rectangle opening located at the bottom side of the chassis, then connected to motherboard's J7, the HDD LED & ACPI LED & SMI connector.

5.5. Touch Controller Assembly

If a touch screen is integrated with the system, the touchscreen controller is to be installed right after the installation of the motherboard.

For easy maintenance in the future, the controller is to be installed to a bracket rather than to the system compartment directly. From your point of view, there is a rectangle opening at the left upper side of the chassis. Insert the touch controller bracket to the opening and retain it to the chassis with 2 flat-head 3*5 screws.

For easy assembly, the related cables are to be connected first.

1. The touchscreen cable Fig. 5-1. (14) is a 10 pin to 10 pin flat cable. One end is connected to the touchscreen controller first.
2. There is a 2 pin (black & red) cable to provide the power source for the touchscreen. Connect one end to the controller.
3. Connect the other end of the 10-pin to 10 pin flat cable to the onboard COM 3 header connector and connect the other end of the 2 pin power cable to the motherboard's PWR1.
4. Fix the touchscreen controller (13) to the bracket with 2 3*6 screws.
5. Fold both cables properly.
6. Make sure the two screws at the outward upper side of the chassis are also properly fixed.

5.6. HDD Module Assembly

The APOLLO provides enough space to build in a 3.5" hard disk drive in the system compartment. The following steps show the way to install an internal hard disk drive.

1. Make the chassis lower side near you. Now, from your point of view, the 3.5" HDD module is to be installed to the right upper side of the system compartment.
2. Refer to Figure 5-4. Fix the hard disk drive (1) to the HDD bracket (3) with 2 flat-head screws.
3. Connect the one end of the 40-pin IDE cable (2) to hard disk drive.
4. There are two clips at the bottom of the compartment used to hold the HDD module to the system compartment. Insert the HDD module to the compartment and clip it into place. Fix the HDD module to the chassis with one 3*5 flat-head screw outside of the right upper side of the chassis.
5. Make sure the other end of the 40 pin IDE cable is connected to the motherboard IDE 1 connector.

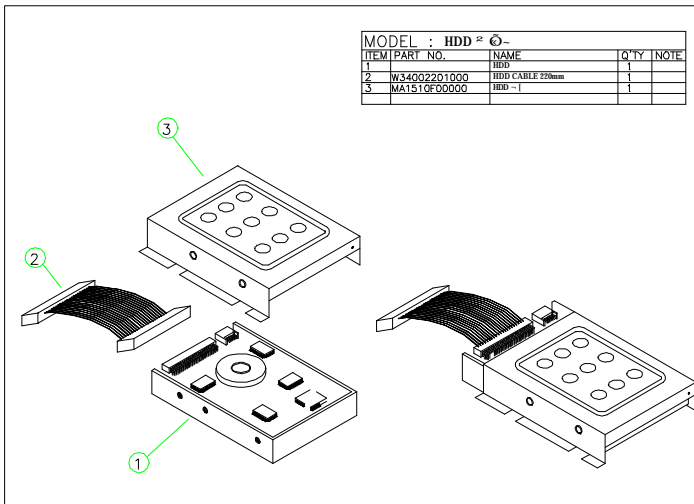


FIGURE 5-4: HDD INSTALLATION

5.7. Touchscreen or Front Bezel Assembly

The APOLLO is able to accommodate Elo analog resistive touch or Intelli (SAW) touch or MicroTocu capacitive touchscreen. PLEASE NOTE THAT WHEN DIFFERENT TOUCH MODULE IS INSTALLED, DIFFERENT TOUCHSCREEN METAL BRACKETS ARE NEEDED. YOU CAN NOT 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 assemble the touchscreen to the front bezel.

1. There are 4 rubber slips which are already one-side taped with glue. Glue the 4 slips to the gutters located at the back side of the plastic front bezel. The 4 rubber slips act as cushions to absorb the pressure when the touchscreen is fixed to the front bezel with screws.
2. There are 4 metal brackets used to fix the touchscreen to the front bezel. The metal brackets have to be taped with soft tapes as shown on Figure 5-6 (7) & (8).
3. Then, fix the touchscreen to the front bezel with the 4 metal brackets with screws. The soft tapes are used to absorb the pressure when the metal brackets fix the touchscreen to the front bezel.

If no touchscreen is installed, there are two options. One is to put a resilient glass instead. The advantage of putting a resilient glass is to protect the LCD panel.

The other option is to fix 4 bronze sticks (5 mm) to the LCD bracket to push the LCD panel forward to make up the gap between the LCD and the front bezel. But when using this way, two screw holes on the front bezel need to be cut to prevent LCD mechanism interference to the front bezel.

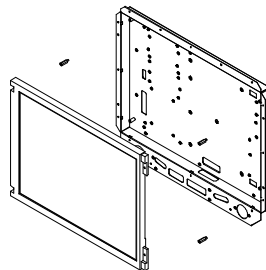


FIGURE 5-5: APOLLO W/O TOUCH

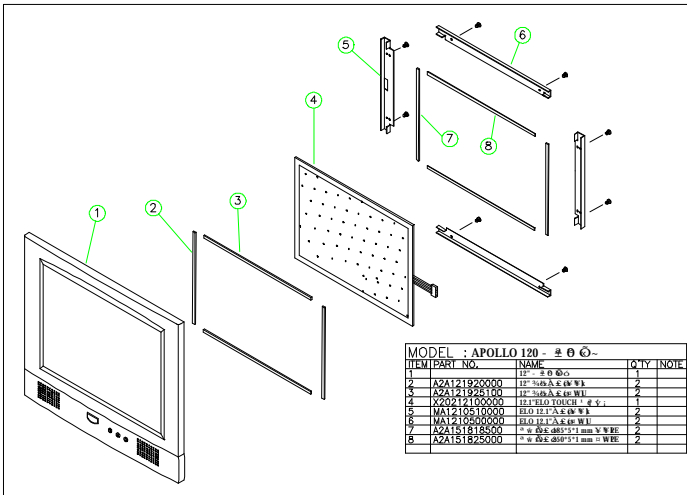


FIGURE 5-6: APOLLO 120 FRONT BEZEL ASSEMBLY

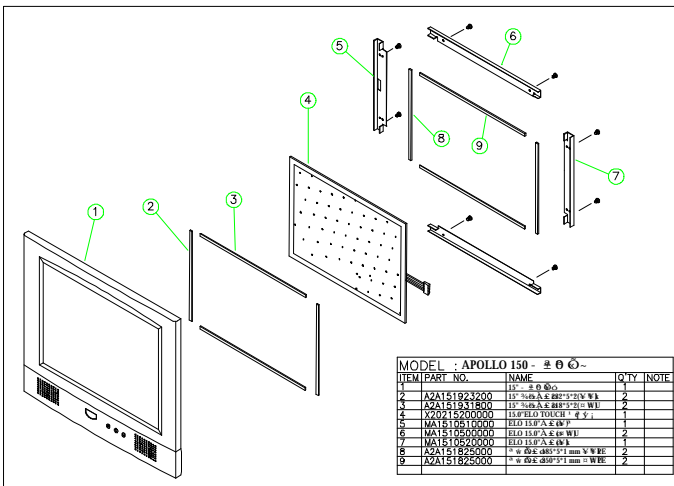


FIGURE 5-7: APOLLO 120 FRONT BEZEL ASSEMBLY

5.8. LCD Module Assembly

Figure 5-8 and 5-9 illustrate the way to assemble the APOLLO's LCD module.

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. The assembly of APOLLO 120 LCD module slightly differs from that of APOLLO 150.

1. For APOLLO 120, there are two LCD brackets (Fig. 5-8 (2) & (3)) used to fix to the LCD panel to the LCD holder (11) from the up & down sides. Fix the two brackets to the LCD holder first.
2. Fix the LCD panel to the LCD holder with four 3*8 screws.
3. Attach the insulator to the inverter.
4. The inverter cable for APOLLO 120 is a 4-pin to 4-pin cable and for APOLLO 150 is a 4-pin to 7-pin cable with wafer connectors at both sides. Connect the one end of the inverter cable to inverter first. The other end is for later connection to the onboard INV1.
5. Connect the pink-white high voltage wires from the LCD the inverter.
6. The inverter for (Fig. 5-8 (9)) APOLLO 120 is to be fixed at the right middle side of the LCD holder with the up side down and for APOLLO 150 (Fig. 5-8 (7)) is at the reverse side of the LCD holder later after the LCD module is to be installed to the system..

There are other accessories to be put on the LCD module.

1. Fix 6 bronze sticks (15 mm) to the lower sides of the LCD holder. Fix the IR/LED board to the LCD holder with two 3*6 screws.
2. The two speakers (Fig. 5-8 (6)) are to be fixed to the right and left sides of the IR/LED board. The speaker wires are to be connect to the 2-pin header on the IR/LED board.

After finishing the LCD module installation, the module is to be assembled to the front bezel module, then to the chassis with the motherboard and touch controller already on.

1. Use special air blower to blow any dust between the LCD and touchscreen before the two modules are assembled together. Retain the LCD module and the front bezel module together with six 3*6 screws.
2. The LCD cable is 41-pin to 50-pin cable with around 30 cm in its length. Insert the 41-pin end into the opening at the back side of the LCD holder and have it firmly plugged to the LCD connector located at the rear side of the LCD panel.
3. Install the whole front bezel module with LCD already on to the system chassis with the motherboard, touchscreen controller and HDD module already on.
4. The LCD cable is already at the rear side of the LCD holder through the cutout. Make sure the 50 pin end is to go through the rectangle opening at the rear side of the system chassis. *PLEASE NOTE THAT THERE IS A BROWN WIRE SWINGING OUTSIDE OF THE 50 PIN END. THIS BROWN WIRE IS ONLY TO BE WITH 12.1" SYSTEM. TAPE THE BROWN WIRE TO THE CABLE TO PREVENT IT FROM SWING AROUND TO CAUSE POSSIBLE SHORT CIRCUITRY.*
5. Connect the LCD cable to the 50 pin LCD header connector on the motherboard. *SPECIAL ATTENTION NEEDS TO BE PAID WHEN PLUGGING THE LCD CABLE TO THE LCD HEADER CONNECTOR ON THE MOTHERBOARD. ON THE 50 PIN END, PIN #1 IS MARKED WITH A WHITE POINT. MAKE SURE PIN 1 OF THE ONBOARD LCD CONNECTOR MATCH PIN 1 OF THE CABLE ANY WRONG PLUGGING OR SHIFTED PLUGGING WILL DAMAGE THE LCD PANEL OR LEAD TO MAL-FUNCTION.*

6. The touchscreen 5-pin flat cable should go through the rectangle opening at the upper left side of the LCD holder, then connect to the touchscreen controller.
7. For APOLLO 150, the inverter now is to be fixed to the left outward side of the chassis and have the inverter cable go into the chassis through the cutout. Connect the other end of the inverter cable to the motherboard's INV1.
8. Connect the other end of the IR/LED cable to the IR/LED board.

5.9. CD-ROM/DVD-ROM/FDD Module Assembly

The APOLLO provides enough space to accommodate a CD-ROM or CD-RW or DVD-ROM and a floppy disk drive. The CD-ROM or DVD-ROM drive used in the APOLLO 120/150 is not the common 5.25" drive seen in computer stores. Rather, it is a slim type drive widely used in notebook computers.

The APOLLO 120/150 can connect to an external floppy disk drive or an internal slim type floppy disk drive, depending on the system requirement.

Please note that either an external floppy disk drive or internal floppy disk drive can be used.

5.9.1. Internal CD-ROM/FDD Assembly

The following steps show the ways to install an internal CD-ROM or DVD-ROM and floppy disk drive.

1. Make the chassis' lower side near you. Now, from your point of view, the CD-ROM/FDD module is to be installed on the left side of the chassis.
2. Refer to Figure 5-10. Attach the CD-ROM board (4) to the slim CD-ROM (2) and fix them together with 2 screws.
PLEASE NOTE THAT THE 2 SCREWS NEED TO BE INCASED WITH 2 PLASTIC WASHERS (3) TO PREVENT SHORT CIRCUITRY.
1. Insert the CD-ROM module to the CD-ROM/FDD bracket (9) and fix them together with 2 screws.
2. There is a 40-pin CD-ROM cable. Connect one end to the CD-ROM board.
3. Attach one end of the 26-pin FDD flat cable (8) to the slim floppy disk drive (7) first.
4. Insert the FDD module to the CD-ROM/FDD bracket and fix them together with 2 flat-head screws.
5. There is a small metal bracket (1) used to firmly fix the CD-ROM and FDD modules to the CD-ROM/FDD bracket. This small bracket is to prevent the CD-ROM/FDD from moving when installed to the FDD/CD-ROM bracket.

6. Connect the 40-pin end of the CD-ROM cable to the motherboard IDE 2 connector.
7. There is a 4 pin CD audio-in cable to be plugged on the motherboard. Connect the other end of the CD-Audio cable (6) to the 4 black pin connector on the CD-ROM board.
8. Connect the other end of.
9. Fix the whole unit to the chassis and fix them together with 3 flat-head 3*5 screws.

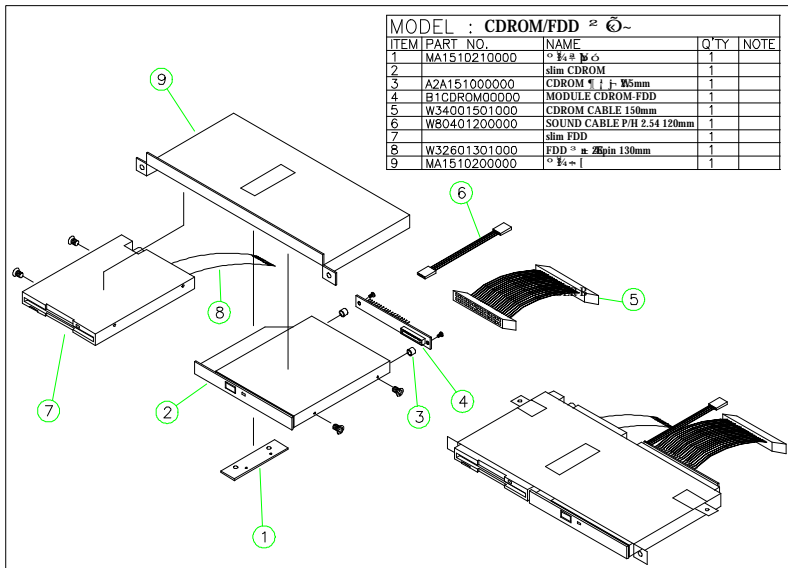


FIGURE 5-10: CD-ROM/FDD MODULE ASSEMBLY

5.9.2. External FDD Connection

1. Use the provided 15-34 pin FDD cable (see below figure) to connect to the system's 15-pin FDD D-sub connector located at the rear side of the cover.
2. Connect the other end (34 pin) of the FDD cable to a standard 3.5" FDD. Match pin 1 of the FDD and pin 1 of the cable.
3. To drive the floppy disk drive, it will need 5V power. Connect the provided FDD power cable to the floppy disk drive to the +5V/12V DC-out connector to obtain 5V power for the device.



FDD cable

5.10. Power Module Assembly

The power supply is to be integrated with the power brackets before it is installed to the panel PC system. The following diagram shows the steps to assemble the ATX power module. For the specification of the power supply, please refer to APPENDIX.

1. Refer to Figure 5-11. Attach the power fix bracket (2) to the power supply (3) and fix them together with 2 flat-head screws (3*5). This small bracket is used to prevent the power supply from moving around in the power bracket.
2. Insert the power supply to power bracket (1) and fix them together with four 3*5 screws.
3. Manage all the power cables from the power supply properly.
4. Insert the power switch (4) to power bracket (5). The other end of the switch cable is to be connected to the 2-pin POWER ON switch, SW1 on the motherboard.
5. Plug the ATX power cable to the ATX power connector, PWR 3 on the motherboard.
6. Connect the big 4P end of the power cable to the HDD.
7. Connect the small 4P end the CD-ROM board.
8. The power module is to be installed to the system right on the top of the CD-ROM/FDD module.

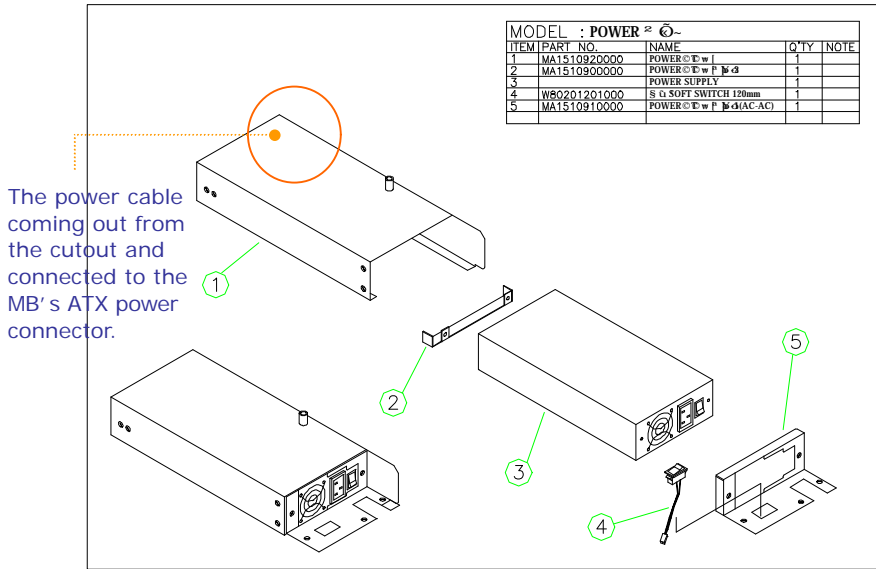


FIGURE 5-11: APOLLO AC POWER MODULE

5.11. Expansion Outlets & Riser Card Assembly

The APOLLO 120/150 provides PCI/ISA expansion slots for system expansion. Via the specially designed riser card, the system can accommodate either two PCI or one PCI plus one ISA expansion cards; all the connectors of the expansion card will come out from the expansion outlet on the left side of the chassis for further cable connection.

The expansion outlet bracket has to be installed to the system before plugging the riser card to the motherboard PCI/ISA expansion slot.

1. When the system is reverse with the rear side facing you and lower side near you, the expansion outlets are located at the right upper side of the chassis.
2. Install the expansion window (Fig. 5-1 (11)) to the chassis and fix them together with 2 flat-head screws.
3. If no expansion card is plugged to the riser card, seal the expansion outlets with the 2 metal slips located inside the expansion outlet.
4. The riser card (8) is to be fixed with the metal bracket (9) with two flat-head screws first. Then, plug the riser card to the onboard PCI/ISA slot. Make sure the riser card is firmly plugged to the motherboard to prevent any bad connection.



Due to the internal space limitation, the expansion card can not exceed 190*120 (L*W) mm if no internal FDD is installed. However if an internal FDD is installed, the ISA card can not exceed 170*120 mm.

5.12. Back Panel Assembly

The back panel module is the last module to be integrated to the APOLLO main system before the plastic housing is to be installed to the system.

1. On the I/O board, there are 6 D-SUB connectors with 2 bronze sticks on each side. Remove the 12 bronze sticks.
2. Insert the I/O board to the I/O bracket (2) and fix them together with the 12 bronze sticks. Fix them again with 2 screws on the other side.
3. Fix the complete I/O module to the metal back panel (1) five flat-head 3*5 screws.
4. Connect one end of the 2 68-pin SCSI cables (Fig. 5-12 (4)) to the I/O board (3). Via the 2 SCSI cables, all the onboard I/O signals are converted to the I/O board for device cable connection.
5. Connect the other end of the two SCSI cables to the SCSI 1 and SCSI 2 connectors on the motherboard.
6. Fix the back panel module to the main system.
7. Fix a stand bracket at the bottom side of the chassis with 2 screws.

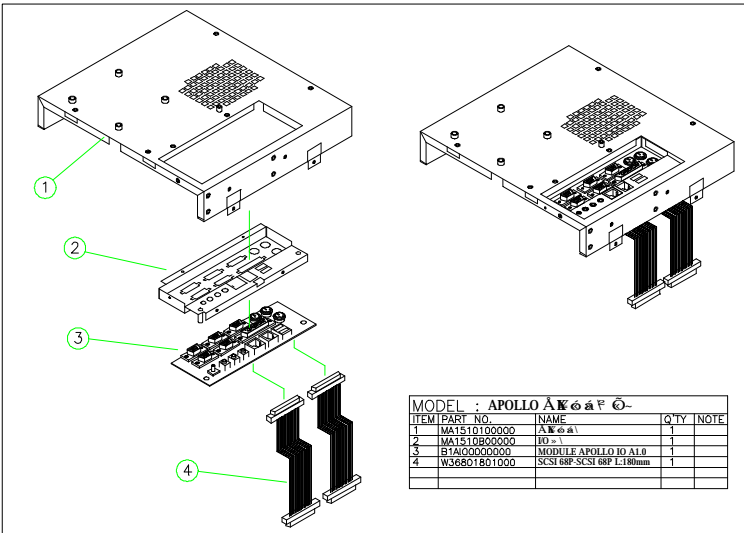


FIGURE 5-12: APOLLO BACK MODULE ASSEMBLY

To assemble the stand module (Fig. 5-14 (1)) to the main system (2), simply tighten the two units together with 4 screws from the base. Then, install the two base back covers (4 & 5) to the unit as shown below. There is an additional knob in the accessory. If touchscreen is to be used with the system, it is suggested that the additional knob is to be assembled to the system to prevent the system from wobbling. By swiveling the knob and pulling the base up and down, the angle can be fixed at 45 to 90°.

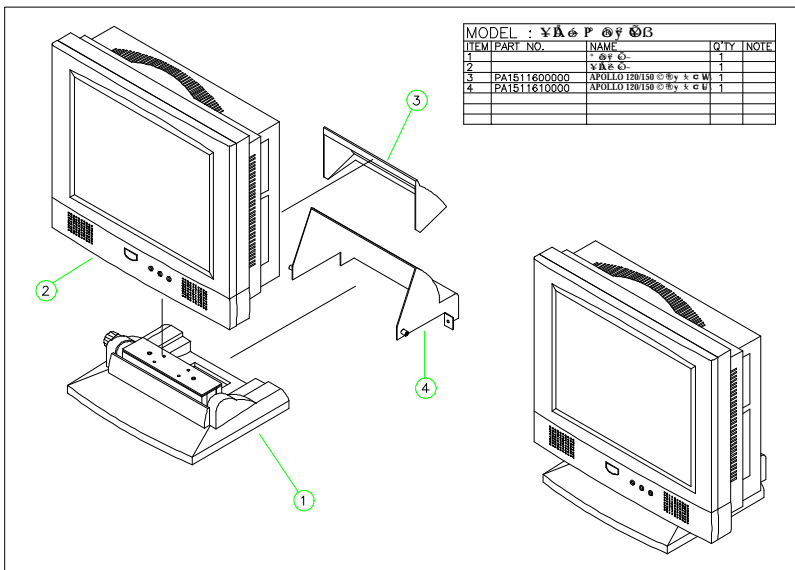


FIGURE 5-14: APOLLO STAND TO MAIN SYSTEM ASSEMBLY

6. SYSTEM MOTHERBOARD & I/O BOARD

The system controller used in the APOLLO III system is a special-design Celeron/Pentium® III multimedia motherboard. All the onboard signal is connected to an I/O board via 2 SCSI cables for external device connection. This chapter provides jumper definition and connector signal of the motherboard and the I/O board.

6.1. APOLLO III Motherboard

This section provides background information and detail specification on the APOLLO 120/150 III system engine, PC 610. Sections include:

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

6.1.1. General Information

The **PC 610** is an Intel Celeron/Pentium III (Socket 370) multimedia ATX motherboard with LCD/VGA controller, Ethernet 100/10, AC97 sound, and IDE flash disk. By integrating single chip, SiS630ST, the PC 610 provides a high performance/low cost desktop solution.

Highly integrated, the PC 610 can adapt Intel® Celeron (66/100MHz) and Pentium III (100/133MHz) CPU. Onboard features include four serial ports, one multi-mode Parallel ports, a floppy drive controller and a PS/2 keyboard PS/2 mouse interface. 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. 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 610 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 610 is an ideal platform for any consumer computing applications where space is a premium.

6.1.2. Specifications

PC 610: Multimedia Intel Celeron/Pentium III Motherboard with XGA, LCD, Dual display, Ethernet & Audio Interface

- ◆ **CPU:** Intel Socket 370
 - Intel Pentium III FCPGA 1GHz/133MHz
 - Intel Pentium III FCPGA 650-933/133MHz
 - Intel Pentium III FCPGA 500E-850E/100MHz
 - Intel Celeron FCPGA 800MHz-1.10GHz/100MHz
 - Intel Celeron FCPGA 533AMHz-766MHz/66MHz
 - Intel Celeron PPGA 300A-533MHz/66MHz
- ◆ **Main Chipset:** SiS630ST
- ◆ **System BIOS:** Award PnP Flash BIOS
- ◆ **System Memory:** 1 x 168 pin DIMM sockets supporting SDRAM up to 512MB
- ◆ **L2 Cache:** CPU built-in
- ◆ **Standard I/O**
 - Serial ports x 4
 - Parallel port x 1
 - ATA 100/66 IDE x 2: supports up to 4 IDE devices
 - FDD x 1: supports up to 2 floppy disk drives
 - PS/2 Keyboard Interface x 1
 - Internal Keyboard Interface x 1
 - PS/2 Mouse Interface x 1
 - USB Interface x 2
- ◆ **IrDA:** 5-pin header with CIR support
- ◆ **Ethernet**
 - 100/10 Base-T Ethernet
 - Support WAKE-ON-LAN

◆ **Display**

- LCD controller
- Integrated 2D/3D graphics engine, 4X AGP
- Share system memory architecture able to utilize the display memory size up to 64MB
- Maximum resolution for video chipset: 640x480, 800x600, 1024x768, 1280x1024, 1600x1200, 1920x1200, True-color
- Supporting LCD/VGA dual display mode (under Windows 98, Windows ME and Windows XP)

◆ **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, Line-In
- 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)

◆ **Expansion Bus: PCI/ISA x 1**

◆ **Power: ATX power**

◆ **Dimension: 300*146 mm (L*W)**

Specifications are subject to change without notice.

6.1.4. 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	DOC Address Selection
JP2	Clear CMOS
JP5	COM2 RS-232/422/485 selection
JP6	COM2 RS-232/422/485 selection
JP7	COM2 RS-232/422/485 selection
JP8	COM2 RS-232/422/485 selection
JP9	COM2 RS-232/422/485 selection
JP10	COM2 RS-232/422/485 selection

6.1.4.1. DOC 2000 Address Setting (JP1)

1-2	D000
3-4	D800

6.1.4.2. Clear CMOS (JP2)

1-2	Clear CMOS
3-4	Normal

6.1.4.3. COM 2 232/422/485 Setting (JP5,6,7,8,9 & 10)

COM 2 is a RS-232/422/485 serial port. JP5, 6, 7, 8, 9 and JP10 determine the specific port type.

	RS-232	RS-422	RS-485
JP5	1-2	2-3	2-3
JP6	1-2	2-3	2-3
JP7	1-2	2-3	2-3
JP8	1-2	2-3	2-3
JP9	1-2	2-3	2-3
JP10	1-2	3-4	5-6

6.1.5.Connectors & Pin Assignment

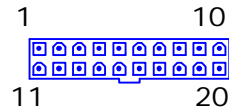
The table below lists the function of each connector on the PC 610. Their corresponding pin assignments will be shown in the following sections.

Connector	Description
PWR1	Power Connector For Touch Screen
PWR2	Power Connector For CD-ROM
PWR3	ATX Power Connector
J2	CD Audio In
J7	HDD LED & ACPI LED & SMI
J8	IR/CIR connector
J9	KB/Mouse/Speaker/LED Connector
SCSI 1	I/O Connector
SCSI 2	I/O Connector
FAN1	CPU FAN Connector
FAN2	System FAN Connector
SW1	ATX Power ON/OFF
LCD	LCD Connector
INV1	LCD Inverter connector
FDD1	FDD connector
IDE1	Primary IDE connector
IDE2	Primary IDE connector
COM3	Serial Port 3 (For Touch Screen)

6.1.5.1. PWR3: ATX Power connector

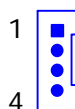
PWR 3 is a standard ATX power connector. This connector is provided to connect to an ATX power supply. The plug of the power supply will only insert in one orientation due to the different hole size. Find the proper orientation and push down the power connector firmly to make sure the pins are aligned. Its pin assignments are listed below:

Pin #	Signal	Pin #	Signal
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PSON#
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	PWROK	18	-5V
9	SB5V	19	+5V
10	+12V	20	+5V



6.1.5.2. J2: CD Audio I N

Pin #	Signal
1	Left channel
2	CD GND
3	CD GND
4	Right channel

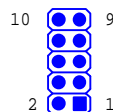


6.1.5.3. J7: HDD LED & ACPI LED & SMI

Pin #	Signal
1	HDD LED+
2	HDD LED-
3	ACPI LED+
4	ACPI LED-
5	SMI
6	GND

6.1.5.4. J8: IR / CIR Connector

IR		CIR	
Pin #	Signal	Pin #	Signal
1	5V	6	NC
2	NC	7	CIRRX
3	IRRX	8	5V (CIR)
4	GND	9	GND
5	IRTX	10	NC



6.1.5.5. J9: Power LED & KB

Pin #	Signal	Pin #	Signal
1	VCC	2	VCC
3	HDD LED	4	LAN LED
5	IR TX	6	GND
7	NC	8	NC
9	(BLK_CTRL1)	10	(BLK_CTRL2
11	GND	12	GND
13	SPK-LO	14	SPK-RO
15	SPK-LN	16	SPK-LN
17	GND	18	GND
19	EXT.KBDAT	20	INT.KBDAT
21	EXT.KBCLK	22	INT.KBCLK
23	EXT.MSDAT	24	INT.MSDAT
25	EXT.MSCLK	26	INT.MSCLK

6.1.5.6. SW1: ATX Power ON/OFF & Reset

Pin #	Signal
1	Power ON/OFF
2	GND

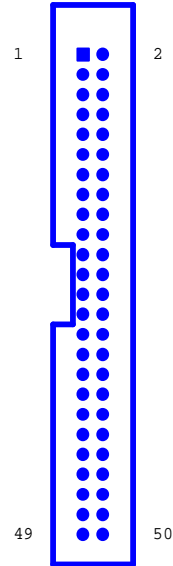
6.1.5.7. COM3

COM 3 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	NC

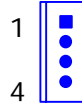
6.1.5.8. LCD1: LCD Connector

Pin #	Signal	Pin #	Signal
1	5V	2	5V
3	GND	4	GND
5	3.3V	6	3.3V
7	VBCAD	8	VBCTLO
9	P00 (B0)	10	P01 (B1)
11	P02 (B2)	12	P03 (B3)
13	P04 (B4)	14	P05 (B5)
15	P06 (B6)	16	P07 (B7)
17	P08 (G0)	18	P09 (G1)
19	P10 (G2)	20	P11 (G3)
21	P12 (G4)	22	P13 (G5)
23	P14 (G6)	24	P15 (G7)
25	P16 (R0)	26	P17 (R1)
27	P18 (R2)	28	P19 (R3)
29	P20 (R4)	30	P21 (R5)
31	P22 (R6)	32	P23 (R7)
33	GND	34	GND
35	SHFCLK	36	FLM
37	DE / M	38	LP
39	GND	40	GND
41	VBCTL1	42	VBCLK
43	GND	44	SSYNC
45	GND	46	VBHCLK
47	ENVB	48	PCIRST#
49	ENEXTPLK	50	INTA#



6.1.5.9. INV1: LCD Inverter Connector

Pin #	Signal
1	Backlight ADJ
2	GND
3	Backlight Enable
4	12V



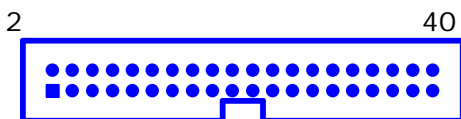
6.1.5.10. FDD1: FDD connector

Pin #	Signal	Pin #	Signal
1	VCC	2	INDEX#
3	VCC	4	DSA#
5	VCC	6	DSKCHG#
7	NC	8	NC
9	NC	10	MOA#
11	NC	12	DIR#
13	RWC#	14	STEP#
15	GND	16	WD#
17	GND	18	WE#
19	GND	20	TRAKO#
21	GND	22	WP#
23	GND	24	RDATA#
25	GND	26	HEAD#

6.1.5.11. IDE1/IDE2: Primary/Secondary HDD

The PC 610 provides 2 sets of 40-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 large 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



6.1.5.12. SCSI 1: Parallel Port/Serial Port/DI O Port

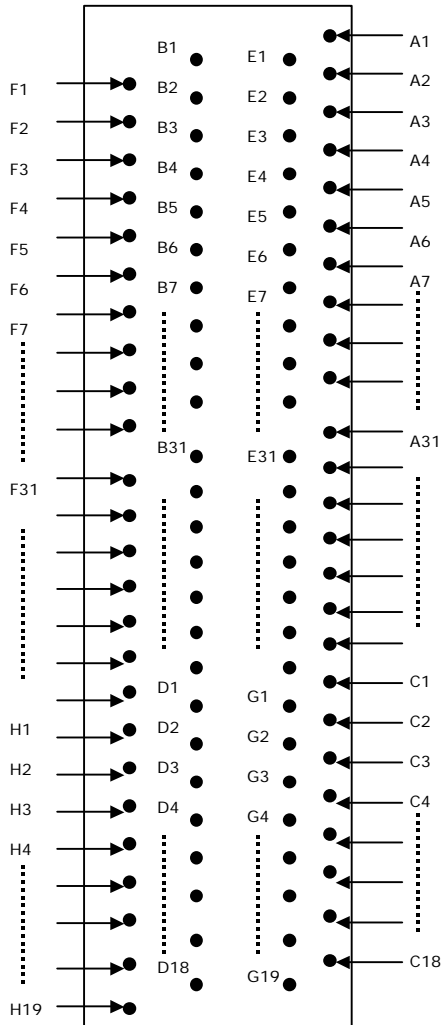
Pin #	Signal	Pin #	Signal
1	GND	35	GND
2	PD0	36	GND
3	PD1	37	RTSA
4	PD2	38	DTRA
5	PD3	39	SOUTA
6	PD4	40	RIA
7	PD5	41	CTSA
8	PD6	42	DSRA
9	PD7	43	SINA
10	STB#	44	DCDA
11	ACK#	45	GND
12	SLIN#	46	RTSB
13	INT#	47	DTRB
14	ERR#	48	SOUTB
15	AFD#	49	RIB
16	SLCT	50	CTSB
17	PE	51	DSRB
18	BUSY	52	SINB
19	GND	53	DCDB
20	IN 0	54	GND
21	IN 1	55	RTSD
22	IN 2	56	DTRD
23	IN 3	57	SOUTD
24	OUT 0	58	RID
25	OUT 1	59	CTSD
26	OUT 2	60	DSRD
27	OUT 3	61	SIND
28	GND	62	DCDD
29	VCC	63	GND
30	VCC	64	+12V
31	VCC	65	+12V
32	VCC	66	+12V
33	VCC	67	+12V
34	VCC	68	+12V

6.1.5.13. SCSI 2: KB/MS/VGA/LAN USB/EXT. FDD

Pin #	Signal	Pin #	Signal
1	GND	35	GND
2	GND	36	GND
3	HSYNC	37	UV0+
4	VSYNC	38	UV0-
5	RED	39	UV1+
6	GREEN	40	UV1-
7	BLUE	41	GND
8	DDCCLK	42	GND
9	DDCDATA	43	GND
10	GND	44	RX+
11	GND	45	RX-
12	GND	46	TX+
13	RWC#	47	TX-
14	INDEX#	48	GND
15	MOA#	49	GND
16	DSA#	50	GND
17	DIR#	51	LINE IN_R
18	STEP#	52	LINE IN_L
19	WD#	53	MIC
20	WE#	54	HP_R
21	TRAK0#	55	HP_L
22	WP#	56	NC
23	RDATA#	57	GND
24	HEAD#	58	GND
25	DSKCHG#	59	GND
26	GND	60	KBDATA
27	GND	61	KBCLK
28	BACK LIGHT	62	MSDATA
29	NC	63	MSCLK
30	VCC3	64	SB5V
31	VCC3	65	SB5V
32	VCC3	66	SB5V
33	VCC3	67	SB5V
34	VCC	68	SB5V

6.1.5.14. CN4: PCI /I SA Expansion Slot

The PC 610 provides an ISA/PCI slot for ISA and PCI device expansion.



CN4: PCI/ISA Slot Side

CN4: PCI/ISA Slot Connector Pin Assignment

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
F1	GND	B1	GND	E1	GND	A1	IOCHK
F2	GND	B2	ISARST	E2	GND	A2	SD7
F3	INTB	B3	VCC	E3	INTC	A3	SD6
F4	INTA	B4	IRQ9	E4	INTD	A4	SD5
F5	VCC	B5	-5V	E5	VCC	A5	SD4
F6	KEY	B6	DRQ2	E6	KEY	A6	SD3
F7	VCC	B7	-12V	E7	VCC	A7	SD2
F8	PCICLK1	B8	OWS	E8	PCIRST	A8	SD1
F9	GND	B9	+12V	E9	GNT0	A9	SD0
F10	GNT3	B10	GND	E10	REQ0	A10	IORDY
F11	GND	B11	SMEMW	E11	GND	A11	AEN
F12	REQ3	B12	SMEMR	E12	PCILKE2	A12	SA19
F13	AD31	B13	IOW	E13	GND	A13	SA18
F14	AD29	B14	IOR	E14	AD30	A14	SA17
F15	NC	B15	DACK3	E15	NC	A15	SA16
F16	KEY	B16	DRQ3	E16	KEY	A16	SA15
F17	NC	B17	DACK1	E17	NC	A17	SA14
F18	AD27	B18	DRQ1	E18	AD28	A18	SA13
F19	AD25	B19	REF	E19	AD26	A19	SA12
F20	CBE3	B20	ATCLK	E20	AD24	A20	SA11
F21	AD23	B21	IRQ7	E21	AD22	A21	SA10
F22	AD21	B22	IRQ6	E22	AD20	A22	SA9
F23	AD19	B23	IRQ5	E23	AD18	A23	SA8
F24	NC	B24	IRQ4	E24	NC	A24	SA7
F25	KEY	B25	IRQ3	E25	KEY	A25	SA6
F26	NC	B26	DACK2	E26	NC	A26	SA5
F27	AD17	B27	TC	E27	AD16	A27	SA4
F28	IRDY	B28	ALE	E28	FRAME	A28	SA3

To continue...

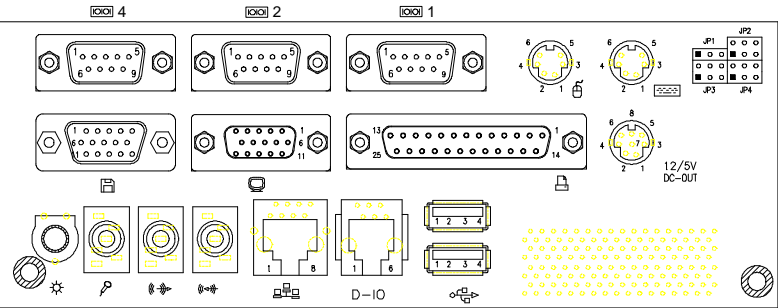
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
F29	DEVSEL	B29	VCC	E29	CBE2	A29	SA2
F30	LOCK	B30	OSC	E30	TRDY	A30	SA1
F31	PERR	B31	GND	E31	STOP	A31	SA0
H1	SERR	D1	MEMCS16	G1	NC	C1	SBHE
H2	AD15	D2	IOCS16	G2	NC	C2	LA23
H3	AD14	D3	IRQ10	G3	CBE1	C3	LA22
H4	AD12	D4	IRQ11	G4	PAR	C4	LA21
H5	GND	D5	IRQ12	G5	GND	C5	LA20
H6	KEY	D6	IRQ15	G6	KEY	C6	LA19
H7	GND	D7	IRQ14	G7	GND	C7	LA18
H8	AD10	D8	DACK0	G8	AD13	C8	LA17
H9	AD8	D9	DRQ0	G9	AD11	C9	MEMR
H10	AD7	D10	DACK5	G10	AD9	C10	MEMW
H11	AD5	D11	DRQ5	G11	CBE0	C11	SD8
H12	AD3	D12	DACK6	G12	AD6	C12	SD9
H13	AD1	D13	DRQ6	G13	AD4	C13	SD10
H14	AD0	D14	DACK7	G14	AD2	C14	SD11
H15	KEY	D15	DRQ7	G15	KEY	C15	SD12
H16	VCC	D16	VCC	G16	VCC	C16	SD13
H17	VCC	D17	MASTER	G17	VCC	C17	SD14
H18	GND	D18	GND	G18	GND	C18	SD15
H19	GND			G19	GND		

6.2. APOLLO III I/O Board

All the onboard I/O signal of the APOLLO motherboard is connected to an I/O board via 2 SCSI cables for external device connection. This section provides jumper definition and connector signal of the I/O board.

6.2.1. Locating Jumpers & Connectors

The following figure helps you to locate the jumpers and connectors on the motherboard.



6.2.2. Jumpers & Jumper Setting

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

JP1	Keyboard Connector power selection
JP2	COM1 Pin 9 power selection
JP3	COM2 Pin 9 power selection
JP4	COM4 Pin 9 power selection

6.2.2.1. JP1: Keyboard Power Select

1-2	SB5V
2-3	+5V

6.2.2.2. COM port Power Selection

JP1: COM1 Pin 9 Power selection

JP2: COM2 Pin 9 Power selection

JP4: COM4 Pin 9 Power selection

RI	5V	12V
1-2	3-4	5-6

6.2.3.Connectors & Pin Assignment

The table below lists the function of each connector on the I/O board. Their corresponding pin assignments will be shown in the following sections.

KB1	Keyboard Connector
MS1	Mouse Connector
COM1	Serial Port 1 (3F8)
COM2	Serial Port 2 (2F8)
COM4	Serial Port 4 (2E8)
CN1	DC Power +5V/+12VC output
LPT1	Parallel Port
CRT1	CRT Display Connector
FDD1	External FDD Connector
USB1	USB Connector 1
USB2	USB Connector 2
DIO1	Digital I/O Connector
LAN1	Ethernet Connector
MIC1	Microphone In Connector
LINE1	Line In Connector
SPK1	Speaker Output Connector
VR1	LCD Backlight Control

6.2.3.1. KB1: PS/2 Keyboard Connector

Pin #	Signal
1	KBDATA
2	NC
3	GND
4	SB5V
5	KBCLK
6	NC

6.2.3.2. KBMS: PS/2 Mouse

Pin #	Signal
1	MSDATA
2	NC
3	GND
4	5V
5	MSCLK
6	NC

6.2.3.3. COM1, COM2, 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		

6.2.3.4. CN1: DC Power Output

Pin #	Signal	Pin #	Signal
1	GND	5	+5V
2	GND	6	+12V
3	+5V	7	GND
4	+12V	8	GND

6.2.3.5. 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		

6.2.3.6. CRT1: 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

6.2.3.7. FDD1: External FDD Connector

Pin #	Signal	Pin #	Signal	Pin #	Signal
1	RWC#	6	WP#	11	RDATA#
2	INDEX#	7	TRAKO#	12	HEAD#
3	MOA#	8	WE#	13	DSKCHG#
4	DSA#	9	WD#	14	GND
5	DIR#	10	STEP#	15	GND

6.2.3.8. J11: 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

6.2.3.9. DI O1: RJ-11 Connector

Pin #	Signal	Pin #	Signal
1	+12V	2	IN_0
3	IN_1	4	GND
5	OUT_0	6	OUT_1

6.2.3.10. LAN1: RJ-45 Ethernet Connector

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

6.2.3.11. MIC1

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

6.2.3.12. LINE 1

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

6.2.3.13. SPK 1

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

6.2.3.14. SCSI 1: PRT Port / Serial Port / DIO Port

Pin #	Signal	Pin #	Signal
1	GND	35	GND
2	PD0	36	GND
3	PD1	37	RTSA
4	PD2	38	DTRA
5	PD3	39	SOUTA
6	PD4	40	RIA
7	PD5	41	CTSA
8	PD6	42	DSRA
9	PD7	43	SINA
10	STB#	44	DCDA
11	ACK#	45	GND
12	SLIN#	46	RTSB
13	INT#	47	DTRB
14	ERR#	48	SOUTB
15	AFD#	49	RIB
16	SLCT	50	CTSB
17	PE	51	DSRB
18	BUSY	52	SINB
19	GND	53	DCDB
20	IN 0	54	GND
21	IN 1	55	RTSD
22	IN 2	56	DTRD
23	IN 3	57	SOUTD
24	OUT 0	58	RID
25	OUT 1	59	CTSD
26	OUT 2	60	DSRD
27	OUT 3	61	SIND
28	GND	62	DCDD
29	VCC	63	GND
30	VCC	64	+12V
31	VCC	65	+12V
32	VCC	66	+12V
33	VCC	67	+12V
34	VCC	68	+12V

6.2.3.15. SCSI 2: KB/MS/VGA/LAN USB/EXT. FDD

Pin #	Signal	Pin #	Signal
1	GND	35	GND
2	GND	36	GND
3	HSYNC	37	UV0+
4	VSYNC	38	UV0-
5	RED	39	UV1+
6	GREEN	40	UV1-
7	BLUE	41	GND
8	DDCCLK	42	GND
9	DDCDATA	43	GND
10	GND	44	RX+
11	GND	45	RX-
12	GND	46	TX+
13	RWC#	47	TX-
14	INDEX#	48	GND
15	MOA#	49	GND
16	DSA#	50	GND
17	DIR#	51	LINE IN _R
18	STEP#	52	LINE IN _L
19	WD#	53	MIC
20	WE#	54	HP_R
21	TRAKO#	55	HP_L
22	WP#	56	NC
23	RDATA#	57	GND
24	HEAD#	58	GND
25	DSKCHG#	59	GND
26	GND	60	KBDATA
27	GND	61	KBCLK
28	BACK LIGHT	62	MSDATA
29	NC	63	MSCLK
30	VCC3	64	SB5V
31	VCC3	65	SB5V
32	VCC3	66	SB5V
33	VCC3	67	SB5V
34	VCC	68	SB5V

7. AWARD BIOS SETUP

The chapter describes how to set up BIOS configuration.

7.1. 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 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.

7.2. Control Key Definition

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
ESC key	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 key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Change color from total 16 colors
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the default
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

7.3. Getting Help

7.3.1. 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>.

7.4. AWARD BIOS Setup

7.4.1. AWARD BIOS Setup Main Menu

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

CMOS Setup Utility – Copyright (C) 1984-200 Award Software

<ul style="list-style-type: none">➤ Standard CMOS Features➤ Advanced BOIS Features➤ Advanced Chipset Features➤ Integrated Peripherals➤ Power Management Setup➤ PnP/PCI Configuration➤ PC Health Status	<ul style="list-style-type: none">➤ Frequency/Voltage ControlLoad Fail-Safe DefaultsLoad Optimized DefaultsSet PasswordSave & Exit SetupExit Without Saving
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : 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 PASSWORD:** Change, set, or disable 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.

7.4.2. Standard CMOS Features

If the **STANDARD CMOS FEATURE** is selected from the main menu, the screen below will appear. This menu allows the users to configure the system components such as date, time, hard disk drive, floppy disk drive and display type. The system BIOS will automatically detect the memory size; therefore no setting is needed.

CMOS Setup Utility – Copyright (C) 1984-200 Award Software
Standard CMOS Features

Date (mm: dd: yy) Tue, Mar 6 2001	Item Help
Time (hh: mm: ss)	Menu Level ▶
➤ IDE Primary Master	Change the day, month,
➤ IDE Primary Slave	year and century
➤ IDE Secondary Master	
➤ IDE Secondary Slave	
Drive A (1.44M, 3.5 in.)	
Drive B (None)	
Video (EGA/VGA)	
LCD Panel ID Select (Type 0)	
Full Screen Function (Disable)	
Halt On (All, But Keyboard)	
Base Memory 640K	
Extended Memory 64448K	
Total Memory 65536K	

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

◆ DATE

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 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

The category identifies the types of hard disk from drive C to F that has been installed in the computer. There are two types: auto type, and user definable type. User type is user-definable; Auto type which will automatically detect HDD type.

Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category.

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

CYLS.	Number of cylinders
HEADS	number of heads
PRECOMP	write precomp
LANDZONE	Landing zone
SECTORS	number of sectors

If a hard disk has not been installed select *NONE* and press <Enter>.

◆ **DRIVE A TYPE / DRIVE B TYPE**

The category identifies the types of floppy disk drive A or drive B 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**

The category selects the default video device

Options: EGA/VGA/CGA40/CGA80/Mono

◆ **FULL SCREEN FUNCTION**

Enable/Disable the full screen function

◆ **HALT ON**

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

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

7.4.3. Advanced BIOS Features

If the **ADVANCED BIOS FEATURES** option is selected from the main menu, the screen below will appear. The following sample screen consists of the default values for PC 610.

CMOS Setup Utility – Copyright (C) 1984-200 Award Software
Advanced BIOS Features

		Item Help
Virus Warning	(Disabled)	Menu Level Allow you to choose the VIRUS warning features for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on the screen and alarm beep
CPU Internal Cache	(Enabled)	
External Cache	(Enabled)	
CPU L2 Cache ECC Checking	(Enabled)	
Processor Number Feature	(Enabled)	
Quick Power On Self Test	(Disabled)	
First Boot Device	(Disabled)	
Second Boot Device	(HDD-0)	
Third Boot Device	(LS120)	
Boot Other Device	(Enabled)	
Swap Floppy Drive	(Disabled)	
Boot up Floppy Seek	(Enabled)	
Boot up NumLock Status	(ON)	
Gate A20 Option	(Fast)	
Typematic Rate Setting	(Disabled)	
Typematic Rate (Chars/Sec)	6	
Typematic Rate Delay (Msec)	250	
Security Option	(Setup)	
OS Select For DRAM > 64MB	(Non-OS2)	
Report NO FDD for Win 95	(No)	
Video BIOS Shadow	(Enabled)	

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

◆ **VIRUS WARNING**

Allow you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

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**

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled Enable cache

Disabled Disable cache

◆ **CPU L2 CACHE ECC CHECKING**

This item allows you to enable/disable CPU L2 Cache ECC checking.

The choice: *Enabled* & *Disabled*.

◆ **PROCESSOR NUMBER FEATURE**

Some of the new generation of socket-370 processors are installed with a unique processor number. This number may be used for verification in Internet transactions and e-commerce. If you prefer not to use or distribute the unique processor number, use this item to suppress the processor number.

The choice: *Enabled* & *Disabled*.

◆ **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 Enable quick POST

Disabled Normal POST

◆ **FIRST/SECOND/THIRD/OTHER BOOT DEVICE**

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

The Choice: Floppy, LS/ZIP, HDD, SCSI, CDROM & Disabled.

◆ **SWAP FLOPPY DRIVE**

If the system has two floppy drives, you can swap the logical drive name assignments.

The choice: *Enabled* & *Disabled*.

◆ **BOOT UP FLOPPY SEEK**

Seeks disk drives during boot up. Disabling speeds boot up.

The choice: *Enabled* & *Disabled*.

◆ **BOOT UP NUMLOCK STATUS**

Select power on state for NumLock.

The choice: *Enabled* & *Disabled*.

◆ **GATE A20 OPTION**

Select if chipset or keyboard controller should control GateA20.

Normal A pin in the keyboard controller controls GateA20

Fast Lets chipset control GateA20

◆ **TYPEMATIC RATE SETTING**

Key strokes repeat at a rate determined by the keyboard controller.

When enabled, the typematic rate and typematic delay can be selected.

The choice: *Enabled* & *Disabled*.

◆ **TYPEMATIC RATE (CHARS/SEC)**

Sets the number of times a second to repeat a key stroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24 & 30.

◆ **Typematic Delay (Msec)**

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750 & 1000.

◆ **SECURITY OPTION**

Select whether the password is required every time the system boots or only when you enter setup.

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

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

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

◆ **OS SELECT FOR DRAM > 64MB**

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

◆ **REPORT NO FDD FOR WIN 95**

Whether report no FDD for Win 95 or not.

The choice: Yes & No.

◆ **VIDEO BIOS SHADOW**

This item allows the video BIOS to be copied to system memory for faster performance.

The choice: *Enabled & Disabled.*

7.4.4. Advanced Chipset Features

If the **ADVANCED CHIPSET FEATURES** option is selected from the main menu, the screen below will appear. The following sample screen consists of the default values for PC 610.

CMOS Setup Utility – Copyright (C) 1984-200 Award Software
Advanced Chipset Features

➤ Advanced DRAM Control 1 (Press Enter)	Item Help
➤ Advanced DRAM Control 2 (Press Enter)	Menu Level ▶
System BIOS Cacheable (Enabled)	
Video RAM Cacheable (Enabled)	
Memory Hole at 15M-16M (Disabled)	
AGP Aperture Size (64MB)	
Graphic Window WR Combine (Enabled)	
Concurrent function (MEM) (Enabled)	
Concurrent function (PCI) (Enabled)	
CPU Pipeline Control (Enabled)	
PCI Delay Transaction (Enabled)	
Memory Parity Check (Enabled)	

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

◆ **ADVANCED DRAM CONTROL 1 / 2 SETTINGS**

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

◆ **AUTO CONFIGURATION**

This item will automatically configure the chipset timing. You may select 'manual' to set up following gray items by your specific need.

The choice: Manual, Auto, 100MHz or 133MHZ.

◆ **SDRAM RAS ACTIVE TIME**

This item defines SDRAM ACT to PRE command period.

The Choice: 6T, 7T, 5T, 4T.

◆ **SDRAM RAS Precharge Time**

This item defines SDRAM PRE to ACT command period.

The Choice: 3T, 2T, 4T, Reserved.

◆ **RAS TO CAS DELAY**

This item defines SDRAM ACT to Read/Write command period.

The choice: 3T, 2T, 4T, Reserved.

◆ **DRAM BACKGROUND COMMAND**

This item is lead-off time control for DRAM background command. When select 'Delay 1T', background commands are issued 1 clock behind memory address (MA) been issued. When select 'Normal', background command and MA are issued at the same time.

The choice: *Delay 1T* or *Normal*.

◆ **LD-OFF DRAM RD/WR CYCLES**

The item is lead-off time control for DRAM Read/Write Cycles. When select 'Delay 1T', memory read/write command is issued 1 clock behind memory address (MA) been issued. When select 'Normal', read/write command and MA are issued at the same time.

The choice: *Delay 1T* or *Normal*.

◆ **WRITE RECOVERY TIME**

This item defines the Data-in to PRE command period.

The choice: 1T or 2T

◆ **VCM REF To ACT/REF DELAY**

This item defines VCM REF to REF/ACT command period.

The choice: 10T, or 9T.

◆ **VCM ACCT To ACT/REF DELAY**

This item defines VCM ACT to ACT/REF command period.

The choice: 10T, 9T, 8T or Reserved.

◆ **EARLY CKE DELAY 1T CNTRL**

When this item is enabled, CKE is driven out from flip-flop. It is used when system operates under low frequency and CKE delay adjustment method defined in the 'Early CKE Delay Adjustment' which can not meet setup time and hold time requirement.

The choice: Normal, Delay 1T.

◆ **Early CKE Delay Adjust**

This item controls the timing for CKE. Various delay options are provided to ensure that CKE can meet SDRAM setup time and hold time specification when CKE is driven out.

The Choice: 1ns, 2ns, 3ns, 4ns, 5ns, 6ns, 7ns, 8ns.

◆ **MEM COMMAND OUTPUT TIME**

This item is to control the timing to drive memory command onto memory bus.

The choice: Normal, Delay 1T.

◆ **SDRAM/VCM CAS LATENCY**

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 2, 3 or SPD

◆ **SDRCLK CONTROL**

This item controls the phase of SDRCLK that lags behind SDCLK.

The choice: *Enabled* or *Disabled*.

◆ **SDWCLK CONTROL CS#/CKE**

This item controls the phase of SDWCLK used for chip set select signals pin that lags ahead SDCLK.

The choice: *Enabled* or *Disabled*.

◆ **SDWCLK CONTROL MA/SRAS**

This item controls the phase of SDWCLK used for MA/ SRAS signals that lags ahead SDCLK.

The choice: +5.0ns~-2.5ns (Default 0.0ns)

◆ **SDWCLK CONTROL DQM/MD**

This item controls the phase of SDWCLK used for DQM/MD signals that lags ahead SDCLK.

The choice: +5.0ns~-2.5ns (Default 0.0ns)

◆ **EGMRCLK CONTROL**

This item controls the phase of EGMRCLK that lags behind SDCLK.

The choice: -1.0ns~+6.5ns (Default 0.0ns)

◆ **EGMWCLK CONTROL**

This item controls the phase of EGMWCLK that lags ahead SDCLK.

The choice: +5.0ns~-2.5ns (Default 0.0ns)

◆ **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 choice: *Enabled* or *Disabled*.

◆ **VIDEO RAM CACHEABLE**

Select 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 choice: *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.

The choice: *Enabled* or *Disabled*.

◆ **AGP APERTURE SIZE**

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 Choice: 4M, 8M, 16M, 32M, 64M, 128M, 256M

◆ **GRAPHIC WINDOW WR COMBIN**

Use this item to enable or disable CPU support for WR Combin.

The choice: *Enabled* or *Disabled*.

◆ **CONCURRENT FUNCTION (MEM)**

This item is CPU & PCI Masters Concurrently Access Memory Function. Select enabled allows CPU access memory cycles and PCI masters access memory cycles concurrently issued onto host bus and PCI bus, respectively, and then the memory access cycles will be rearranged by SiS630 to memory sequentially.

The choice: *Enabled* or *Disabled*.

◆ **CONCURRENT FUNCTION (PCI)**

This item is CPU & PCI Masters Concurrently Access PCI Bus Function. Select enabled allows CPU access PCI bus cycle and PCI masters access memory cycles concurrently issued onto host bus and PCI bus, respectively.

The choice: *Enabled* or *Disabled*.

◆ **CPU PIPELINE CONTROL**

When enabled this item, only one pending cycle is allowed at one time.

When disabled, there might be more than two pending cycles at one time depends on the CPU behavior.

The choice: *Enabled* or *Disabled*.

◆ **PCI DELAY TRANSACTION**

If the chipset has an embedded 32-bit write buffer to support delay transaction cycles, you can enable this item to provide compliance with PCI Ver.2.1 specifications. We recommend that you leave this item at the default value.

The choice: *Enabled* or *Disabled*.

◆ **MEMORY PARITY CHECK**

Enabled this item to test the boot-up memory. .

The choice: *Enabled* or *Disabled*.

7.4.5. Integrated Peripherals

If the **INTEGRATED PERIPHERALS** option is selected from the main menu, the screen below will appear. The following sample screen consists of the default values for PC 610.

CMOS Setup Utility – Copyright (C) 1984-200 Award Software
Advanced BIOS Features

		Item Help
SIS 630 OnChip IDE Device	(Press Enter)	Menu Level ▶
SIS 630 OnChip PCI Device	(Press Enter)	
USB Controller	(Enabled)	
USB Keyboard Support	(Disabled)	
IDE HDD Block Mode	(Enabled)	
Onboard FDC Controller	(Enabled)	
Onboard Serial Port 1	(3F8/IRQ4)	
Onboard Serial Port 2	(2F8/IRQ3)	
UART Mode Select	(Normal)	
RxD, TxD Active	(Hi, Lo)	
IR Transmission Delay	(Enabled)	
UR2 Duplex Mode	(Half)	
Use IR Pins	(IR-Rx2Tx2)	
IR Transmission Delay	(Enabled)	
Onboard Parallel Port	(378/IRQ7)	
Parallel Port Mode	(SPP)	
EPP Mode Select	(EPP1.7)	
ECP Mode Use DMA	(3)	
Game Port Address	(201)	
Midi Port Address	(330)	
Midi Port IRQ	(5)	
Onboard Serial Port 3	(3E8)	
Serial Port 3 Use IRQ	(IRQ 10)	
Onboard Serial Port 4	(2E8)	
Serial Port 4 Use IRQ	(IRQ 11)	
Init Display First	(PCI slot)	
Fast Write Capability	(Enabled)	
AGP 4X Capability	(Enabled)	
AGP Auto Calibration	(Enabled)	
System Share Memory..... (8MB)		
Extended Graphic Memory		

SIS 630 ONCHIP IDE DEVICE

◆ **INTERNAL PCI / IDE**

This chipset contains an internal PCI IDE interface with support for two IDE channels.

The choice: Primary, Secondary or Both.

◆ **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 choice: 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 33 MB/s. When you select *Auto* in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.

The choice: Auto or Disabled.

◆ **IDE BURST MODE**

Selecting *Enabled* reduces latency between each drive read/write cycle, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to *Disabled*. This field does not appear when the Internal PCI/IDE field, above, is *Disabled*.

The choice: *Enabled* or *Disabled*.

SIS 630 OnCHIP PCI Device

◆ **SIS-7018 AC97 AUDIO**

Select *Enabled* to support AC97 Audio.

The choice: *Enabled* or *Disabled*.

◆ **SIS-900 10/100M ETHERNET**

This item provides a total communication solution including 10/100Mb Fast Ethernet for Office requirement and 1Mb HomePNA for Home Networking.

The choice: *Enabled* or *Disabled*.

◆ **ONBOARD FDC CONTROLLER**

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

The choice: *Enabled* or *Disabled*.

◆ **ONBOARD SERIAL PORT 1/PORT 2/PORT 3/PORT 4**

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ10, 2E8/IRQ11, Disabled or Auto.

◆ **UART MODE SELECT**

This item allows you to select UART mode.

The choice: *Enabled* or *Disabled*.

◆ **UR2 DUPLEX MODE**

This item allows you to select the IR half/full duplex function.

The choice: Half or Full.

◆ **ONBOARD PARALLEL PORT**

This item allows you to determine access onboard parallel port controller with which I/O address.

The choice: 3BC/IRQ7, 378/IRQ7, 278/IRQ5, Disabled.

◆ **PARALLEL PORT MODE**

Select an operating mode for the onboard parallel (printer) port. Select *Normal*, *Compatible*, or *SPP* unless you are certain your hardware and software both support one of the other available modes.

The choice: SPP, EPP, ECP, ECP+EPP.

◆ **ECP MODE USE DMA**

Select a DMA channel for the parallel port for use during ECP mode.

The choice: 3, 1.

◆ **USB CONTROLLER**

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

The choice: *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 choice: *Enabled* 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/writes per sector the drive can support.

The choice: *Enabled* or *Disabled*.

◆ **INIT DISPLAY FIRST**

This item allows you to decide to active which bus first (PCI Slot or AGP first).

The choice: PCI Slot or, AGP.

◆ **SYSTEM SHARE MEMORY SIZE**

This item defines the System Share Memory Size for video.

The choice: 2MB, 4MB, 8MB, 16MB, 32MB, 64MB

7.4.6. Power Management Setup

If the **POWER MANAGEMENT SETUP** option is selected from the main menu, the screen below will appear. The following sample screen consists of the default values for PC 610.

CMOS Setup Utility – Copyright (C) 1984-200 Award Software
Power Management Setup

ACPI function	(Enabled)	Item Help
ACPI Suspend Type	(S3 (STR))	Menu Level ►
Video OFF Option	(Susp, Stby - Off)	
Video Off Method	(V/H, SYNC+B) ank)	
Switch Function	(Break/Wake)	
Modem Use IRQ	(3)	
Hot Key Function As	(Power Off)	
HDD Off After	(Disable)	
Power Button Override	(Instant Off)	
Power Status Resume Control	(Always Off)	
➤ PM Wake Up Event	(Press Enter)	

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

◆ **ACPI FUNCTION**

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: *Enabled* or *Disabled*.

◆ **ACPI SUSPEND TYPE**

This item allows you to S1(Power ON Suspend)/S3(Suspend To RAM) the Advanced Configuration and Power Management (ACPI).

The choice: S1(POS) or S3(STR).

◆ **VIDEO OFF OPTION**

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On Monitor will remain on during power saving modes.

Suspend -->

Off

Monitor blanked when the systems enters the Suspend mode.

Susp,Stby -->

Off

Monitor blanked when the system enters either Suspend or Standby modes.

All Modes -->

Off

Monitor blanked when the system enters any power saving mode.

◆ **VIDEO OFF METHOD**

This determines the manner in which the monitor is blanked.
V/H

SYNC+Blank

This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer. Blank Screen This option only writes blanks to the video buffer. DPMS Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

◆ **SWITCH FUNCTION**

You can choose whether or not to permit your system to enter complete Suspend mode. Suspend mode offers greater power savings, with a correspondingly longer awakening period..

The choice: Break/Wake, Disabled.

Hot Key Function As Select *Enabled* if your system has a hot key for soft power off.

The choice: *Enabled* or *Disabled*.

◆ **HDD OFF AFTER**

By default, this item is *Disabled*, meaning that no matter the mode the rest of the system, the hard drive will remain ready. Otherwise, you have a range of choices from 1 to 15 minutes or Suspend. This means that you can elect to have your hard disk drive be turned off after a selected number of minutes or when the rest of the system goes into a Suspend mode.

◆ **POWER BUTTON OVER RIDE**

You could press the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."

The choice: Soft-Off, Delay 4 Sec.

PM WAKE UP EVENTS

◆ **IRQ [3-7,9-15], NMI**

The following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- IRQ [3-7, 9-15], NMI
- IRQ 8 Break Suspend: You can *Enable* or *Disable* monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

◆ **RING / PCIPME POWER UP CONTROL**

When you select *Enabled*, a signal from ring / PCIPME returns the system to Full On state.

The choice: *Enabled* or *Disabled*.

◆ **KB POWER ON PASSWORD**

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

The choice: *Enabled* or *Disabled*.

◆ **POWER UP BY ALARM**

When you select *Enabled*, the following fields appear. They let you set the alarm that returns the system to Full On state.

Date (of Month) Alarm lets you select a day from 1 to 31 .
Time Alarm lets you select a time for the alarm in hours , minutes , and seconds .

The choice: *Enabled* or *Disabled*.

7.4.7. PnP/PCI Configuration

If the **PNP/PCI CONFIGURATION** option is selected from the main menu, the screen below will appear. The following sample screen consists of the default values for PC 610.

CMOS Setup Utility – Copyright (C) 1984-200 Award Software
PnP PCI Configuration

Reset Configuration Data	(Disabled)	Item Help
Resources Controlled By	(Auto(ESCD))	Menu Level ►
x IRQ Resources	Press Enter	Default is Disabled.
PCI/VGA Palette Snoop	(Disabled)	Select Enabled to rest 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 OS cannot boot

↑ ↓ → ←: Move Enter : Select +/-/PU/PD: Value F10: Save
ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults
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 choice: *Enabled* or *Disabled*.

◆ **RESOURCE CONTROLLED BY**

The Award Plug and Play BIOS has the capacity to automatically configure all of 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 choice: 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 for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: *Legacy ISA* and *PCI/ISA PnP*.

◆ **PCI/VGA PALETTE SNOOP**

Leave this field at *Disabled*.

The choice: *Enabled* or *Disabled*.

7.4.8. PC Health Status

The **PC HEALTH STATUS** auto detects the system's temperature, voltage and fan speed.

CMOS Setup Utility – Copyright (C) 1984-200 Award Software
PC Health Status

CPU Warning Temperature (Disabled)	Item Help
Current System Temp.	Menu Level ►
Current CPU1 Temperature	
Current FAN1 Speed	
Current FAN2 Speed	
CPU VCore	
VIO 3.3V	
+ 5 V	
+ 12 V	
- 12 V	
- 5 V	
VBAT (V)	
5VSB (V)	
Shutdown Temperature (Disabled)	

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

7.4.9. Frequency Voltage Control

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

CMOS Setup Utility – Copyright (C) 1984-200 Award Software
Frequency Voltage Control

		Item Help
Auto Detect DIMM/PCI Clk	(Enabled)	Menu Level ►
Spread Spectrum	(Disabled)	
CPU Host/SDRAM/PCI Clock	(Default)	

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

◆ **AUTO DETECT DIMM/PCI CLK**

This item allows you to enable/disable auto detect DIMM/PCI Clock.

The choice: *Enabled* or *Disabled*.

◆ **SPREAD SPECTRUM**

This item allows you to enable/disable the spread spectrum modulate.

The choice: *Enabled* or *Disabled*.

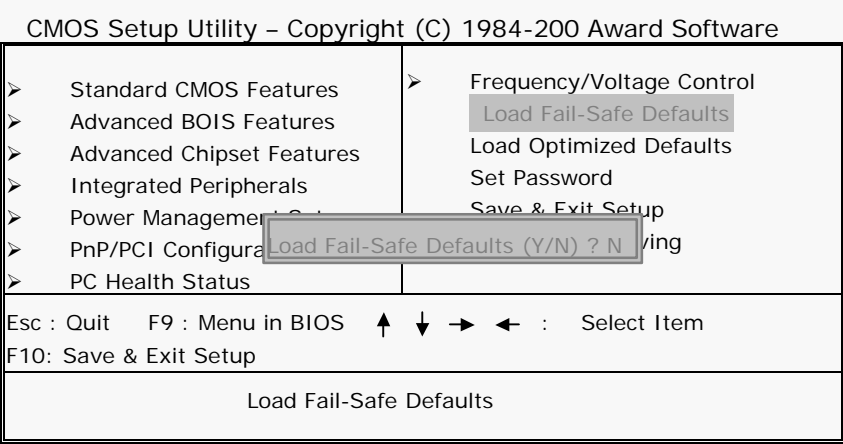
◆ **CPU Host/DRAM/PCI Clock**

This item allows you to select CPU/PCI frequency.

The choice: Auto Detect, 66/66/33MHz, 66/100/33MHz, 100/100/33MHz, 100/133/33MHz, 133/100/33MHz, 133/133/33MHz

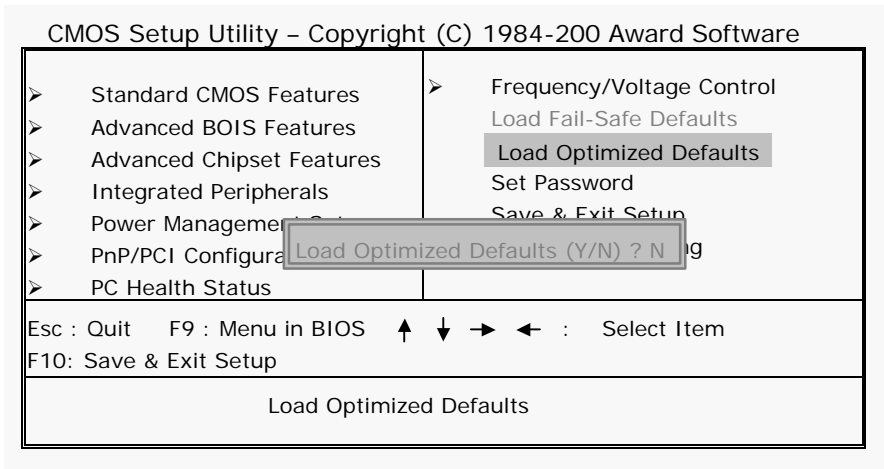
7.4.10. Load Fail-Safe Defaults

The default values of the **LOAD FAIL-SAFE DEFAULTS** indicates the most appropriate value of the system parameters that the system would be in safe configuration.



7.4.11. Load Optimized Defaults

The default values of the **LOAD OPTIMIZED DEFAULTS** indicates the most appropriate value of the system parameters that the system would be in best performance configuration.



7.4.12. 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.

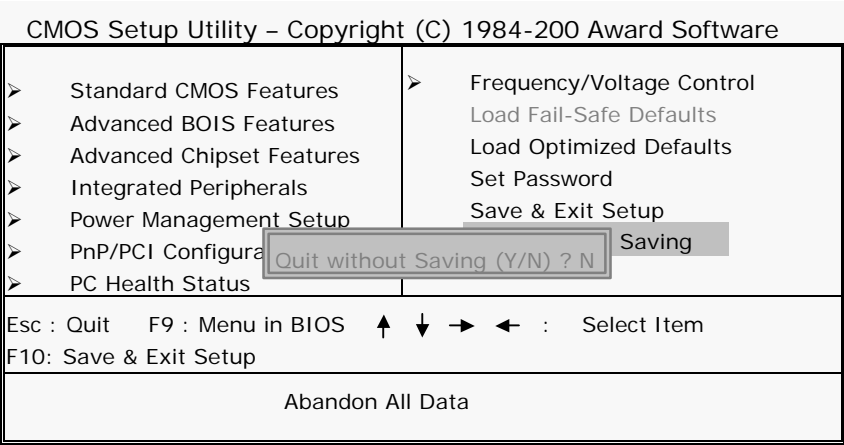
7.4.13. Save and Exit Setup

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.

CMOS Setup Utility – Copyright (C) 1984-200 Award Software	
<ul style="list-style-type: none"> ➤ Standard CMOS Features ➤ Advanced BOIS Features ➤ Advanced Chipset Features ➤ Integrated Peripherals ➤ Power Management Setup ➤ PnP/PCI Configuration ➤ PC Health Status 	<ul style="list-style-type: none"> ➤ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Password Save & Exit Setup
<div style="border: 1px solid black; padding: 5px; display: inline-block;">Save to CMOS and Exit (Y/N) ? Y</div>	
Esc : Quit F9 : Menu in BIOS ↑ ↓ → ← : Select Item F10: Save & Exit Setup	
Save Data to CMOS	

7.4.14. 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.



8. SOFTWARE & DRIVERS INSTALLATION

The chapter introduces the PC 610 onboard VGA, Ethernet, Audio and the respective drivers and installation.

8.1. Ethernet Drivers

The PC 610 provides a 10/100 Base T fast Ethernet.

The PC 610 Ethernet drive diskette or CD diskette contains the following drivers;

SiS630ST Ethernet drivers for

- ✧ Windows 95/95OSR2
- ✧ Windows 98/98SE
- ✧ Windows 2000
- ✧ Windows ME
- ✧ Windows NT
- ✧ Windows NT4.0

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

<http://www.sis.com.tw>

8.2. PC 610 AGP XGA

By integrating an advanced hardware 2D/3D GUI engine and 64-bit graphic display interface, the PC 610 can deliver AGP 4X performance and memory bandwidth of up to 1GB. It adopts *Share System Memory* architecture which can flexibly utilize the frame buffer size up to 64MB.

In addition to providing standard interface for analog monitor, the PC 610 also provides an interface for digital flat panels.

The PC 610 XGA driver diskettes contain the following drivers;

SiS630ST VGA drivers for

- ✧ Windows 95
- ✧ Windows 98
- ✧ Windows ME
- ✧ Windows 2000
- ✧ Windows NT4.0

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

<http://www.sis.com.tw>

8.3. Audio Setup

The PC 610 audio driver diskette contains the following drivers;

SiS630ST audio drivers for

- ✧ DOS
- ✧ Windows 95/98
- ✧ Windows ME
- ✧ Windows 2000
- ✧ Windows NT

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

<http://www.sis.com.tw>

8.4. Driver Installation

To install the Ethernet, VGA and Audio drivers, find the 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;

PanelPC & Motherboard/Drivers & Utilities/PC 600

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.

For Windows XP installation, all the related drivers are already bundled in Microsoft Windows XP.

9. TOUCHSCREEN

For keyboardless operation, the APOLLO 120/150 provides an optional touchscreen. The APOLLO III system can use either MicroTouch capacitive touchscreen or ELO resistive type touchscreen or ELO Intelli touch. This chapter details the procedures to install the software drivers under DOS and Windows operation.

9.1. MicroTouch Touch Driver Installation

9.1.1. Two types of MicroTouch touchscreens

MicroTouch manufactures both capacitive and resistive touchscreens.

-*Capacitive touchscreen* has a cable harness taped to the edge. The cable exits from the middle of the right side of the screen. This cable connects to the touchscreen controller.

Although the two kinds of touchscreens look slightly different, the process of installing the touchscreen onto APOLLO III system and to install the software driver are the same.

9.1.2. TouchWare–the MicroTouch Software

TouchWare includes the software that lets the MicroTouch touchscreen work with the APOLLO III system. MicroTouch provides drivers for the following operating systems;

- Windows 95 and Windows NT 4.0
- Windows NT 3.51
- Windows 3.1x and MS-DOS
- MS-DOS only
- OS/2
- Be sure to install the correct version of TouchWare for your operating systems. The following sections will provide more detailed information on installing TouchWare.

-Note: When the TouchWare installation is finished, be sure to start the APOLLO III system to load and activate the touchscreen driver.

- Touchscreen Control Panel
- You can use the Touchscreen control panel to set your preferences for the touchscreen. For example, the can define the following preferences:
- Whether the touch action occurs when you touch the screen or when you lift your fingers (or pen) off the screen
- Whether you hear a sound when the screen is touched
- How fast you need to touch to produce a double-click

You can also use the Touchscreen control panel to calibrate the touchscreen, to stabilize the cursor, and define where the cursor appears relative to your touch (an offset), and to run diagnostic programs.

Online Help

TouchWare provides online help for setting up and using the touchscreen. These help files use standard Windows Help, complete with hypertext and hypergraphics to create and display available topics.

Online help provides you with information specific to a TouchWare function or option. You can use the online help to find answers to all your TouchWare questions.

TouchWare Uninstall

The uninstall utility automatically deletes all TouchWare components from your computer and removes all TouchWare entries from the system files.

9.1.3. Installing TouchWare

When you install TouchWare, you have two installation options:

- Express Install
- Custom Install

The *Express* option installs all TouchWare files for either Windows 95 or Windows NT, and automatically places the files in the Program Files\MicroTouch\TouchWare directory. The *Express* option also creates a MicroTouch Touchscreen icon on the Windows Control Panel and a program group called *MicroTouch* with icons for each TouchWare program. The *Custom* option also creates all TouchWare files; however, you can specify the destination directory for the TouchWare files and the name of the program group for TouchWare programs. Use *Custom* install to configure your system with multiple monitors.

To install TouchWare, follow the procedures below:

1. Make sure the touchscreen is properly connected. The Setup program can not configure the touchscreen without it.
2. Start Windows. Make sure no other applications are open.
3. Insert the TouchWare Disk 1 into a diskette drive.
4. Click the *Start* button on the taskbar.
5. Point to *Settings*, and then click *Control Panel*.
6. Double click *Add/Remove Programs*, and a Add/Remove Programs dialog box will be opened.
7. Choose the *Install/Uninstall* tab.
8. Click *Install*. The system displays a dialog box reminding you to insert the first installation disk.
9. Click *Next*. The system automatically searches your disk drives for an installation program. The MicroTouch installation program is called SETUP.EXE.

10. Click *Finish* to run the SETUP.EXE installation program. The setup program begins to execute and load TouchWare files.
11. Follow the instructions displayed on the screen. Make your selections carefully when answering questions to complete the installation.

Once TouchWare has been installed, you have to restart the APOLLO III system in order to load the touchscreen driver. TouchWare provides many options for optimizing the performance of the touchscreen. You can adjust settings of the touch mode, touch sounds, double-click speed, double-click area and other cursor options. Use the Touchscreen Control Panel to set your preferences and calibrate to specific screen resolution.

9.1.4. Uninstalling TouchWare

The Uninstall program removes all TouchWare components from the APOLLO III system. These components include TouchWare files, directories, program folders and other folder items. The Uninstall program also remove all TouchWare entries from the system registry files.

Note: The Uninstall program may not work correctly if the control panel is open. Be sure to close TouchWare before running Uninstall.

To uninstall TouchWare, follow the procedures below:

1. Click *Start* and point to *Programs*, and then point to *MicroTouch*.
2. Click on *TouchWare Uninstall*. The uninstall program begins.
3. Follow the instructions displayed on the screen.

You may receive the following message when the Uninstall is complete:

"Some elements could not be removed. You should manually remove items related to the application."

This is normal because several files will remain in use until you reboot the system. Click on *Details ...* to see the remaining files.

Note: Once the Uninstall is complete, you must restart the system. The touchscreen driver is still in use until you restart the system.

9.1.5. Calibrate the MicroTouch Touchscreen

After the touchscreen and TouchWare are installed, you must calibrate the touchscreen.

Calibration serve two purposes:

- Sets the active area of the touchscreen
- Aligns the touchscreen's active area to the underlying video
- To calibrate the touchscreen, use the *Calibrate* option on the Touchscreen control panel and follow the directions displayed on the screen. For more information, please refer to the online help or MicroTouch website.

Note: Before calibrating the touchscreen, let the display warm up for several minutes and then center the video image within the screen area. Also, always calibrate the touchscreen at the display video resolution that you touch application will use.

9.1.6. Getting More Information

For more information on setting up the MicroTouch touchscreen and installing the TouchWare to the APOLLO III system, refer to the online help. You can also download MicroTouch touchscreen drivers and user documentation from MicroTouch website or Bulletin Board System (BBS).

- MicroTouch website is located at
<http://www.3m.com>
- Click the *Customer Info* button and follow the instruction on the screen to download TouchWare software or documentation.
- Call 1-978-659-9250 to dial into MicroTouch's BBS. You need a modem and standard communication software to connect to the BBS. Follow the instruction on the screen to download TouchWare software or documentation.
- If after consulting the documentation, you still need help with the setup of the MicroTouch to the system, you can either
- Call MicroTouch Technical Support at 1-800-MICROTOUCH (1-800-642-7686).
- Send an e-mail to Technical Support at @microtouch.com.
-

9.2. Elo Touchscreen Driver Installation

The Elo resistive touch and Intelli touch will use the same drivers and utilities which are stored in either the CD diskette or floppy disk drive.

9.2.1. System Requirements

The DOS drivers will run on any system with DOS 2.0 or later version. The Windows drivers will run on any system with Windows 3.1 or later versions. The DOS demonstration program requires a VGA color display. The touchscreen calibration program for DOS supports standard and VESA-compatible display modes. Otherwise, all software is video independent. An Elo touchscreen must be installed on the display and connected to a serial or bus controller.

9.2.2. About Elo Software

Software Included

The accompanying DOS and Windows Driver Disk contains the following Elo driver software:

EloDEV Touchscreen driver program for DOS :

This program makes all Elo touchscreen controllers, including serial RS-232, PC-Bus, and Micro Channel versions look the same to other driver and application programs.

MonitorMouse for DOS Mouse emulation driver for DOS : This program combines touch input from EloDEV and mouse input from your mouse driver into a single MOUSE.COM-compatible application interface.

MonitorMouse for Windows Mouse emulation driver for Microsoft Windows : This program allows all Windows programs to be used with a touchscreen. Your mouse may be used in conjunction with the touchscreen. DOS mouse-driven programs run from Windows may also use the touchscreen.

TouchBack Keystroke emulation driver for DOS : Applications must be specially written for use with TouchBack. Your application documentation should specify if TouchBack is required.

The DOS and Windows Driver Disk also contains the following software:

EloDEMO A VGA-graphics program for DOS which demonstrates the capabilities of the touchscreen hardware and many techniques for touchscreen software.

Utility and Diagnostic Programs An assortment of programs are included to calibrate the touchscreen and verify the operation of serial ports, touchscreen controllers, and driver programs.

9.2.3. Installation

This section details the installation procedures for the software on the DOS and Windows Driver Disk. Four steps are required:

- Step 1 Configuring the touchscreen controller
- Step 2 Installing the controller
- Step 3 Running the INSTALL program
- Step 4 Calibrating the touchscreen

STEP 1 - CONFIGURING THE TOUCHSCREEN CONTROLLER

THE MANUFACTURER ships most touchscreen controllers preconfigured for use with Elo software.

STEP 2 - INSTALLING THE CONTROLLER

If you need help when installing the touchscreen controller or making the connections, please contact the Manufacturer's Customer Service department.

STEP 3 - RUNNING THE INSTALL PROGRAM

The DOS and Windows Driver Disk contains an installation program which will automatically transfer all necessary files to the hard disk.

If you intend to install the Windows drivers, make sure that the Windows has been installed and operating properly before proceeding. *You must have a DOS mouse driver (MOUSE.COM) installed for your mouse if you wish to continue using your mouse along with the touchscreen in DOS or Windows.*

If you only want to change the configuration of your touchscreen controller, see *Changing Your Hardware Configuration with SETUP*, page 14, for information on the SETUP utility.

To install the software, insert the DOS and Windows Driver Disk and type:

A: INSTALL <Enter>

or

B: INSTALL <Enter>

Respond to the on-screen prompts and instructions. You will be asked to specify the model and configuration of your controller, then select between **DOS Express Installation, Windows Express Installation, or Selective Installation**. **The touchscreen controller of the APOLLO 120/140/150 I is serial type. The model number is E271-2210 AccuTouch. Baud rate of the controller is "9600". The APOLLO 120/140/150 I uses onboard COM3 to drive this controller, IRQ is selected by BIOS setting. IRQ10 is the factory default setting for COM3.** The software to be installed and disk space requirements will be displayed for each installation option. You may specify the drive and directory for the files you choose to install, or use the default (C:\TOUCH).

The INSTALL program will modify your AUTOEXEC.BAT file, (and SYSTEM.INI file for Windows installations). Copies of the original files will be saved as AUTOEXEC.OLD and SYSTEM.OLD.

Command Line Flags

Several flags may be specified on the INSTALL command line.

To override the default system language used by INSTALL, specify the -L flag as follows:

INSTALL -L <x>

Use -Lg or -Ld for German, -Ls for Spanish, -Lf for French, or -Le for English.

To override the path to C:\AUTOEXEC.BAT, use the -a flag as follows:

INSTALL -a <filename with path>

To skip the VGA graphics sign-on screen, enter:

INSTALL:

More than one flag may be specified, separated by spaces. Flags may be in upper or lower case.

STEP 4 - CALIBRATING THE TOUCHSCREEN

The final installation step is calibrating the touchscreen. Type "GO" when instructed. Begin the calibration sequence.

You will be prompted to touch three calibration points on the screen. Before you do so, position yourself in front of the screen in normal sitting (or standing) position, with normal height and reach.

Using your finger, touch each of the three points as they appear in the corners of the screen. The program will respond with a "beep" sound as you lift your finger from each point.

Calibration is performed in four common video modes: *80x25 text mode*, *CGA 320x200 graphics*, *VGA 320x200 graphics*, and *VGA 640x480*.

The numerical values for the calibration points for the last video mode are displayed. X or Y-axis inversion is normal.

If the calibration program does not respond to a touch, check the cabling, the switch and/or jumper settings on the controller, and the configuration you selected when installing the software. Run **SETUP** to change the configuration.

Why Calibration is Necessary

Calibration is a necessary step for the touchscreen prior for its operation. Unlike mouse or keyboard applications where the cursor is part of the image, a touchscreen is a physical overlay with an independent coordinate system. Only by knowing the position of the image can the PC software convert touchscreen coordinates into image coordinates. Besides, the differences among touchscreens and controllers, calibration also compensates for the variation in video image among displays. The image is affected by horizontal and vertical adjustments on the monitor and by the physical mounting of the touchscreen.

Additional calibration complications include image blooming, where bright-colored images expand, and the "pin cushion" effect, which causes the corners of the display to be stretched. Poor display linearity can cause similar-size boxes to be larger at the edges of the screen than they are in the middle, or vice-versa. The displayed image can also be tilted. Even changing video modes can affect the screen size.

Perfect calibration cannot be achieved in all circumstances. For example, the user can encounter parallax problems with a change in position, or because the present user is not the same stature as the person who calibrated the screen.

Even the most sophisticated calibration techniques can only partially overcome such variations. Therefore, most touchscreen software uses only a two or three-point calibration sequence and relies instead on well-placed touch zones and appropriate user feedback.

The three-point calibration sequence used by Elo automatically corrects inverted touchscreen installations and backward cable connections. X or Y-axis inversion is normal for most touchscreens.

When Recalibration is Necessary

Once calibrated, the touchscreen will be ready to run automatically each time the system is restarted. Recalibration should only be necessary after moving or resizing the video image, or after changing either the touchscreen, controller, or monitor.

Type "DEMOCAL" or click on "Calibrate" in the Windows Touchscreen Control Panel to re-run the calibration sequence.

UNINSTALLING THE SOFTWARE Demonstration Program

You may wish to delete the demonstration program from your hard disk after you have run it. This will free approximately 1.7 Mbytes of disk space. Delete EloDEMO.EXE, *PIC, *.IMG, and *.BGI, typically found in the \TOUCH directory.

MonitorMouse for Windows

Delete CURSOFF.EXE and Elo.BMP from the \WINDOWS directory. Delete MONMOUSE.DRV, VMMD.386, EloCALW.*, and OEMElo.INF from \WINDOWS\SYSTEM. Delete the lines indicated by comments as added by Elo from your SYSTEM.INI file. Delete the [EloCalW] section from WIN.INI. Run Winodws Setup and re-select your mouse.

All Elo Software

Delete the Elo directory (typically \TOUCH) and then follow the above instructions to delete MonitorMouse for Windows if necessary. Remove any lines for EloDEV, MONMOUSE, NOMOUSE, and TCHBACK from AUTOEXEC.BAT as necessary.

9.2.4. Installing MonitorMouse for Win 95

1. Turn on your computer.
2. Insert the MonitorMouse for Windows 95 disk into drive A.
3. Click the *Start* button, and then click *Run*.
4. Type "a:\setup" in the space provided and press <Enter>.
5. Follow the instructions on the screen.
6. The Touchscreen Setup Wizard will appear. You will need to specify the type of touchscreen controller you are using and how it is connected.
Control type: serial
SmartSet: 2xx0
COM port: COM1
7. Complete the Setup program.
8. Restart Windows 95.
9. Run the Windows 95 Registry Editor by clicking the Start button. Click Run, then type "regedit" and press <Enter>
10. Edit the value of the following registry keys in the following registry key folder to match the number, I/O port Address, and IRQ of the COM port to which the touchscreen is connected:

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\

VxD\MonMouse\

TouchScreen00

\ComPort (the COM port number)

COM 3: 03 00

\ControllerAddress E8 03

\ControllerIRQ (hexadecimal)

IRQ 10: 0A 00

11. Close the Registry Editor by clicking the *Close box*.
12. Restart the computer.
13. Click the Start button, then click Settings, and then click *Control Panel*.
14. Double-click *Elo Touchscreen* to run the Touchscreen Control panel.
15. Click the *Calibrate* button and touch each of the three targets as they appear on the screen. Click *Yes* when the cursor lines up correctly with your finger. Click *OK* to close the Touchscreen Control panel.

NOTES

- Full-screen DOS mode is not supported. However, Windowed DOS mode is fully supported. A touch to a full-screen DOS session will cause your system to immediately return to your Windows desktop. A mouse can be used to access programs run in full-screen DOS mode.
- Windows 95 may lock up during startup if the resource settings in the Setup dialog of the *Touchscreen Control Panel* do not match the actual controller configuration. Use *Safe Mode* to start Windows 95 and change the resource settings to match the controller configuration, then restart Windows 95.
- The touchscreen driver may cause Windows 95 to lock up during Shutdown if the touchscreen is activated after Shutdown is initiated.

Removing the Mouse Pointer

If you wish to eliminate the mouse pointer, you may replace it with the null cursor file, NULL.CUR, supplied with MonitorMouse for Windows 95. Follow the following steps to install the null cursor file;

1. Open the *Control Panel* and select *Mouse*.
2. Select the *Pointers* tab.
3. Highlight the *Normal Select* cursor then select *Browse*.
4. Type " null.cur" in the space provided and select *Open*.
5. Select *OK* to select the option.
6. Exit from the *Mouse Control Panel*. You should notice that the arrow cursor has disappeared. Note that all other cursors will still function as before.

MonitorMouse for Windows 95 Uninstall Procedure

1. Close the Windows *Control Panel* if it is open.
2. Delete the following files from your \Windows\System folder: MONMOUSE.VXD, MONMOUSE.HLP, and MONMOUSE.CPL.
3. Start the REGEDIT.EXE program to edit the registry (click the *Start* button, click *Run*, type "regedit" and press <Enter>). Delete the following keys from the registry:

HKEY_CURRENT_USER\Control
Panel\desktop\DoubleClickHeight

HKEY_CURRENT_USER\Control
Panel\desktop\DoubleClickWidth

Delete the following registry key folders and their contents:

HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\VxD\

MonMouse

HKEY_LOCAL_MACHINE\SOFTWARE\Elo
TouchSystems

4. Use Notepad to delete the following line from the [386Enh] section of the SYSTEM.INI file:
device=monmouse.vxd
5. Delete the directory C:\Elo to remove the touchscreen diagnostic programs and sample Z-axis and calibration programs.

Restart Windows 95.

9.2.5. Installing MonitorMouse for Win NT

1. Start your computer.
2. Insert the MonitorMouse for Windows NT disk into drive A.
3. Click the *Start* button, and then click *Run*.
4. Type "a:\setup" in the space provided and press <Enter>.
5. Follow the directions on the screen.
6. The Touchscreen Setup Wizard will appear. You will need to specify the touchscreen controller on COM3 (IRQ 10). Also specify the language you want to use in the Touchscreen Control Panel.
7. Complete the Setup program.
8. Shutdown and restart Windows NT.
9. Click the *Start* button, then click *Settings*, and then click *Control Panel*.
10. Double-click Elo Touchscreen to run the Touchscreen Control Panel.
11. Click the *Calibrate* button and touch each of the three targets as they appear on the screen. Touch *Yes* when the cursor lines up correctly with your finger. Touch *OK* to close the Touchscreen Control Panel.

Instruction for Windows NT Auto Boot

Windows NT normally displays the system logon dialog when started. Use the following procedure to disable the display of the logon dialog and automatically startup without user intervention.

1. Run REGEDT32.EXE.
2. Locate the Registry subkey:
KEY_LOCAL_MACHINE\SOFTWARE\
Microsoft\Windows NT\CurrentVersion\Winlogon.
3. Establish your domain name, account name, and password (more than likely you will already have the keys "DefaultDomain" and "DefaultUserName" and will want to add a password to that account--"DefaultPassword") using the values you normally type when logging on.
4. To add a "DefaultPassword" value, from the Edit menu choose Add Value. In the *Value name field*, type: "DefaultPassword" (without quotation marks). Select REG_SZ for the Data type. In the *String field*, type your password. Save your changes.
5. From the Edit menu, choose *Add Value*. Enter "AutoAdminLogon" (without quotation marks) in the *Value Name field*. Select REG_SZ for the Data type. Enter 1 in the *String field*. Save your changes.
6. Exit REGEDT32.
7. Reboot your computer. You should log on automatically.

9.2.6. Getting More Information

-For more information on installing the Elo software driver to the APOLLO III system or to download Elo touchscreen drivers, please visit Elo Touchsystem website

-<http://www.elotouch.com>

-Click the *Support* button and follow the instruction on the screen to download Elo software or documentation.

If after consulting the documentation, you still need help with the setup of the Elo touch software to the system, you can click the *Technical* button to locate Elo global service points for help.

Appendix

A: LCD Specification

A-1. The LCD for APOLLO 120

The APOLLO 120 can either use normal brightness or high brightness LCD as its display. For standard APOLLO 120, the LCD's luminance would be 150 nits or above. For high-brightness APOLLO 120, it would be 250 nits or above.

A-1-1. OVERVIEW FOR STANDARD APOLLO 120 LCD

The standard display used for the APOLLO 120 is a TORISAN 12.1" TFT active matrix color liquid display (LCD) module; its model no. is MXS121022010 or its equivalent. It composes of LCD panel, driver ICs, control circuit and backlight. By applying 6 bit digital data, 800x600, 260K-color images are displayed on the 12.1" diagonal screen. Input power voltage is single 3.3V for LCD driving.

A-1-1-2. SPECIFICATION

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

ITEM	SPECIFICATION
Display Area (mm)	246.0 (H) x 184.5 (V) (12.106 inch diagonal)
Number of Pixel	800 x R.G.B (W) x 600 (H)
Sub Pixel Pitch (mm)	0.1025 (W) x 0.3075 (H)
Pixel Pitch (mm)	0.3075 (W) x 0.3075 (H)
Number of Color	262144 colors
Active Viewing Angle	246.0 (W) x 184.5 (H)
Bezel opening area	250.0 (W) x 188.5 (H)
Brightness (cd/m ²)	150 (cd/m ²)
Module Size (mm)	275.0(W)*199(H)*6.9max (T)
Module Weight (g)	440 g (TYP.)
Backlight Unit	CCFL, 1-tube

A-1-2. APOLLO 120 HIGH LUMINANCE LCD

If the APOLLO 120 is using a high luminance LCD, the display used for the is a IMES 12.1" TFT active matrix color liquid display (LCD) module; its model no. is M121-53R or its equivalent. It composes of LCD panel, driver ICs, control circuit and backlight. By applying 6 bit digital data, 800x600, 260K-color images are displayed on the 12.1" diagonal screen.

A-1-2-1. SPECIFICATION

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

ITEM	SPECIFICATION
Display Area (mm)	246.0 (H) x 184.5 (V) (12.1 inch diagonal)
Pixel Format (H*V)	800 (x3) x 600
Pixel Pitch (mm)	0.3075 (H) x 0.3075 (V)
Color Pixel Arrangement	RGB vertical stripe
Display Mode	Normally white
Number of Color	262144 colors
Contrast Ratio	150 : 1 typ.
Brightness (cd/m ²)	250 cd/m ² (CFL Discharge Current = 5.0 mA*2)
Viewing Angle (K>=10)	* Horizontal: (R) 40°, (L) 40° * Vertical: (U) 10°, (L) 20°
Optical Rise time /Fall time	20 msec typ.
Power Consumption (W)	3.8
Power Consumption (w/o inverter) (VDD line + 2 lamps input line)	7.05 W typ.
Electrical Interface	Digital video Signals (6-bit for each color R/G/B)
Module Size (mm)	278.0(W) x 205(H) x 12(D)
Module Weight (g)	462 g
Backlight (luminance becomes half or the initial value) (luminance becomes half or the initial value)	2-tube, 30,000 hrs under 25 °C, continuous operation

A-2. THE LCD FOR APOLLO 150

The standard display used for the APOLLO 150 is a LG 15.1" TFT active matrix color liquid display (LCD); its model no. is LM151X2 or its equivalent. It is a TTL interface LCD panel. It comprises amorphous silicon TFT attached to each signal electrode, a driving circuit and a backlight. This LCD has a built-in backlight with inverter. The 38 cm (15.1") diagonal display area contains 1024 x 768 pixels and can display more than 262,144 colors simultaneously.

A-2-1 SPECIFICATION

General specifications are summarized in the following:

ITEM	SPECIFICATION
Display Mode	Normally white
Number of Color	262144 colors
Viewing Angle	* Horizontal: 60° (typ. Left side, right side) * Vertical: 45° (typ. Up side, Down side)
Cross talk	Horizontal: 2.5% Vertical: 2.5%
Response time	50ms(typ.)
Brightness (cd/m ²)	200 cd/m ²
Life time	40,000 hrs
Contrast Ratio	200:1

A-2-2. ABSOLUTE MAXIMUM RATINGS

ITEMS	SYMBOL	MIN.	MAX.	UNIT
Power Supply Voltage	V _{DD}	0	+3.6	V _{DC}
Lamp Current	I _{BL}	-	9.0	mArms
Operating Temperature	T _{op}	0	50	°C
Storage Temperature	T _{st}	-20	60	°C

Note: Humidity (operation) 20~90%, relative humidity
Humidity (non-operation) 5~85%

B: DiskOnChip® Installation

The APOLLO 120/150 III 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

C: 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 APOLLO is a panel PC system with these two features. To use the APOLLO 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.

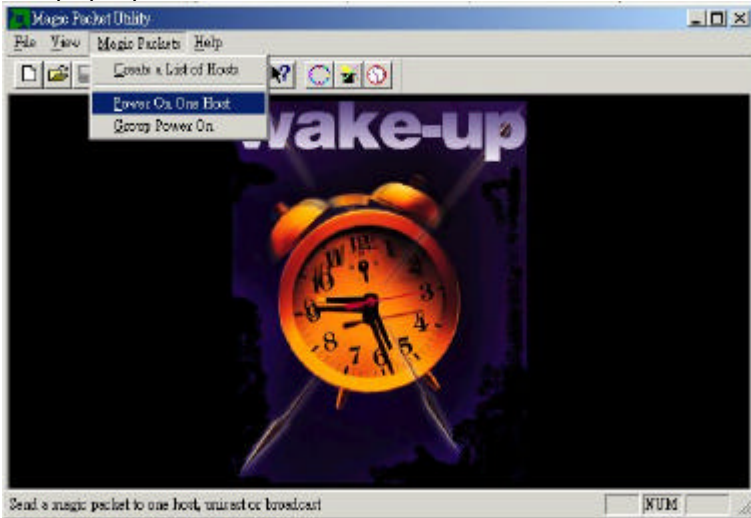
http://www.amd.com/us-en/Networking/TechnicalResources/0,,50_2334_2481,00.html

2. BIOS Setting

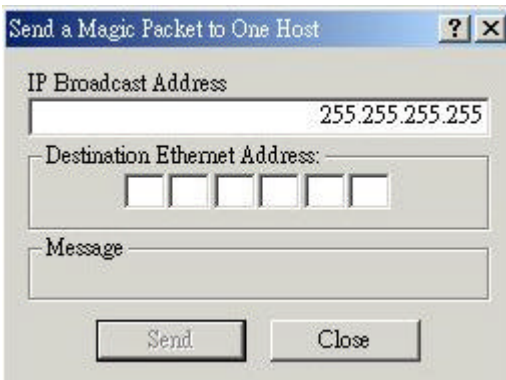
Enter the \POWER MANAGEMENT SETUP\PM WAKE UP EVENTS to enable the MACPME POWER UP CONTROL

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.

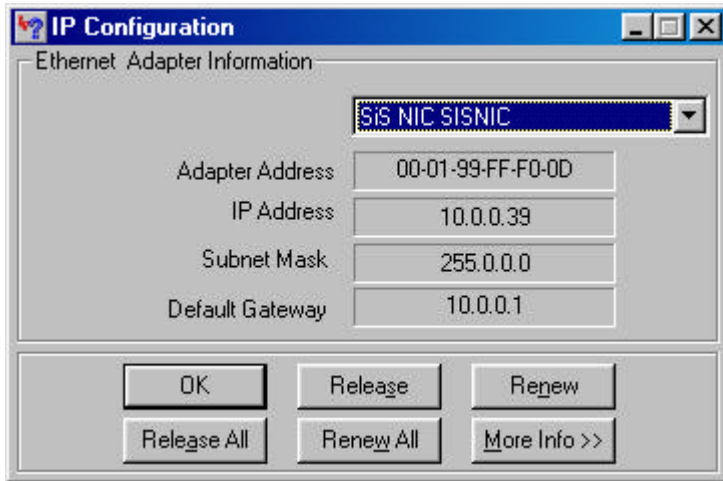


The remote computer can be waken up by selecting the *MAGIC PACKETS* *POWER ON ONE HOST* as shown below.



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 *START\RUN* 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.

D: 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
D000-D7FFh	DiskOnChip®(Default)

E: Power Supply

The APOLLO 120/150 III can either accommodate an AC power supply or a DC power supply.

E-1: AC POWER SUPPLY

The AC power supply used in the APOLLO 120/150 III system is a 150 watts 1U ATX power supply. It is a dual output switching power supply specially designed for the APOLLO III system.

E-1-1: ELECTRONIC SPECIFICATIONS

INPUT

Input range	100-127/200-240VAC, switch selectable
Frequency	47~64Hz
Input current	5A@ 115VAC, 2.5A@230VAC
Inrush current	35@115VAC, 70A230VAC cold start at 25°C

OUTPUT

Maximum power	150W
Hold-up time	14ms at full load @115VAC
Short circuit protection	All output
Oversvoltage protection	+3.3V > 130% +5V > 160%, +12V > 140%

E-1-2: ENVIRONMENT

Operation	0°C to 50°C
Shipping & storage	-20°C to 60°C
MTBF	100,000 hours at 75% of maximum continuous output loading at 25°C ambient conditions

E-1-3: INTERNATIONAL STANDARD

✧ Safety standards

Designed to meet the following standards

UR

TUV

FCC B

CE

E-1-4: MECHANICAL SPECIFICATION

Output rating	+3.3V		+5V			+12V			-5V		-12V		+5VSB	
	min.	max.	min.	max.	peak	min.	max.	peak	min.	max.	min.	max.	min.	max.
Ripple & noise	100mV		100mV			150mV			200mV		200mV		100mV	
Regulation	5%		5%			5%			10%		10%		5%	
Output rating	0.5A	7A	1A	12A	14A	0.5A	5A	8A	0A	0.2A	0A	1A	0A	2A
	83W MAX.													

✧ Dimension (unit: mm)

180 x 100 x 40.5 (L x W x H)