NetXpress™ XL Series Hardware Administrator's User Guide

Important Information

Thank you for purchasing the Netier NetXpress XL thin-client computer. Your satisfaction is important to us. If you experience any problems, please call **1-888-603-1892** for friendly, helpful technical support. Or if you prefer, contact us via Email at **techsupp@netier.com.**

Important Safeguards

Please read all instructions, and save these instructions for future reference. Always unplug your NetXpress XL computer from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning. Only use manufacturer-approved peripherals and attachments. Unapproved peripherals and attachments may be hazardous to system operation.

Do not use your NetXpress XL thin-client computer near water.

Do not place this computer on an unstable cart, stand, or table. The computer may fall, causing serious personal injury as well as damage to the appliance.

Slots and openings in the NetXpress XL case are provided for ventilation. To ensure reliable operation of the computer and to protect it from overheating, do not block or cover these openings. Never place the NetXpress XL near or over a radiator or other heat source. Also, do not place your NetXpress in a built-in installation, such as a bookcase or shelf, unless proper ventilation is provided.

Operate your NetXpress XL only from the power source type indicated on the label. If you are not sure of the type of power supplied in your home or office, please consult your value added reseller (VAR) or local power company.

The NetXpress XL is equipped with a three-wire grounding plug, which is a common plug type that incorporates a third pin for grounding. This plug only fits into a grounding-type power outlet, which contains three receptacles. This design provides added safety. If your outlet is not suited to accept the three-wire grounding plug, contact a certified electrictian to replace the outlet that accepts three-wire grounding plugs.

Caution: Do not undertake any actions that inhibit proper electrical grounding (e.g., removing the grounding prong or using two-wire plug adapters).

Do not allow anything to rest on the power cord. Position your NetXpress XL such that the power cord is protected from any traffic or from heavy obstacles.

Follow all warnings and instructions listed on the computer.

To protect your NetXpress XL from power surges, unplug it from the wall outlet when not in use for long periods. Do not overload wall outlets and extension cords as this can result in fire or electric shock.

Never push objects of any kind into your NetXpress XL computer case slots. Foreign objects can damage the computer and may result in fire or electric shock.

In the event any liquid is spilled on the unit, immediately unplug the external power supply at the wall outlet. If any liquid has penetrated openings in the unit, contact your hardware service provider before you attempt to apply power to the unit again.

Do not attempt to service your NetXpress XL yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel. Unplug this computer from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power cord or plug is damaged or frayed.
- If liquid has been spilled into the computer.
- If the computer has been exposed to rain or water.
- If the computer does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to repair the computer.
- If the computer has been dropped or the cabinet has been damaged.
- When the computer exhibits a distinct change in performance, indicating a need for service.

When replacement parts are required, be sure the service technician uses replacement parts approved by the manufacturer. Use of unauthorized replacement parts may result in fire, electric shock, or other hazards.

Upon completion of any service or repairs to your NetXpress XL, ask the service technician to perform routine safety checks to ensure the computer is in safe operating condition.

Notice

The information in this manual is subject to change without notice.

The information contained in this manual was reviewed and validated. While every precaution was taken during the preparation of this manual, Netier Technologies, Inc. makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

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Print History

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Federal Communications Commission Notice

This equipment has been tested and found to comply with the limits for a **Class B** computing device, pursuant to Part 15 of FCC Rules. Only peripherals (computer input/output devices, monitors, printers, etc.) certified to comply with the **Class B** limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to operation.

NOTICE: This equipment generates and uses radio frequency energy, and if not installed and used in strict accordance with this user guide, interference to operation may result. It has been type tested and found to comply with the limits for a **Class B** computing device, pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in an office or residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna of any adjacent devices.
- Relocate the NetXpress XL with respect to the device being effected.
- Plug the computer into an alternate outlet so that the NetXpress XL and the receiver are on different branch circuits.

If necessary, consult your reseller for additional suggestions.

You may find the following booklet prepared by the Federal Communications Commission (FCC) helpful: *How to Identify and Resolve Radio-TV Interference Problems*. This book is available from the U.S. Government Printing Office, Washington, D.C. 20402.

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Terms

The following list of terms is intended to help you better understand your NetXpress XL Series thin client and its capabilities.

Term	Definition
CPU	Central Processing Unit; The CPU is the brain of the computer. Sometimes referred to simply as the processor or central processor, the CPU is where most calculations take place.
Ethernet	The most widely-installed local area network technology; Fast Ethernet or 10/100 base-T provides transmission speeds up to 100 Mbps.
LED	Light Emitting Diode; pronounced by naming the three letters in succession, not as an acronym, is a semiconductor device that emits visible light when an electric current passes through it. Your NetXpress XL unit incorporates four LED's in the front panel—Power LED, Hard Drive Activity LED, LAN Connection Status LED and LAN Activity LED. For further explanation of each LED, refer to “Case Design” on page 9.
Pixel	A word invented from the terms “picture” and “element”; the basic unit of programmable color on a computer display or in a computer image.
PS/2 Keyboard port	6-pin (Mini-Din) port dedicated to connection of the computer's keyboard. Utilizing this port allows your serial port(s) to be used by another device.
PS/2 Mouse port	6-pin (Mini-Din) port dedicated to connection of the computer's mouse pointing device. Utilizing this port allows your serial port(s) to be used by another device.
RS-232C COM Port	RS-232C (the “C” stands for current version) is the interface your computer uses to talk to and exchange data with your modem and other serial devices. Your NetXpress XL RS-232C COM Port is 16550 UART compatable.
UART	A UART is the microchip with programming that controls a computer's interface to its attached serial devices. Specifically, it provides the computer with the RS-232C Data Terminal Equipment (DTE) interface so that it can "talk" to and exchange data with modems and other serial devices.
USB	Universal Serial Bus; a "plug-and-play" (PnP) interface between a computer and add-on devices (such as audio players, joysticks, keyboards, telephones, scanners, and printers).
SVGA	Most PC displays sold today incorporate the super video graphics array (SVGA) standard. This system can support a palette of up to 16,000,000 colors, although the amount of video memory in a particular computer might limit the actual number of displayed colors to something less than that.
Parallel Port	A connection port capable of transferring more than one bit simultaneously used for connecting an external device such as a printer. Most computers come equipped with at least one parallel port located on the back panel of the computer case.
EPP/ECC	EPP/ECP (Enhanced Parallel Port/Enhanced Capability Port) is a standard signaling method for bi-directional parallel communication between a computer and peripheral devices that offers the potential for much higher rates of data transfer than the original parallel signaling methods. EPP is for non-printer peripherals. ECP is for printers and scanners. EPP/ECP are part of IEEE Standard 1284, which also specifies support for current signaling methods (including Centronics, the de facto standard for printer communication) so that both old and new peripherals can be accommodated.

Introduction

NetXpress Technical Specifications

The XL Series thin clients are manufactured using Integrated Scalable System Architecture™ (ISSA), which allows upgrading of system components to meet almost any computing requirement.

Standard XL Series Features

Both the XL1000 and XL2000 thin clients include the following standard features:

- Trident CBi7 North bridge controller with integrated AGP video
- VIA VT82C686A South bridge controller with integrated SoundBlaster Pro Comp Audio
- Supports Socket-7/Super Socket-7 Processors
- 60~100 MHz FSB With Synchronous and Pseudo-synchronous Mode.
- Supports up to 600MHz, 64bit, Pentium-class CPU with MMX technology
- 512K Built-in L2 cache
- (2) 168-pin DIMM sockets support up to 128MB of FP, EDO, & PC-100 SDRAM.
- Integrated Super I/O, Includes FDC, LPT, COM 1, & USB 1& 2
- Integrated AGP 64-bit 2D/3D Graphics Accelerator.
- Integrated H/W Soundblaster Pro/Direct Sound AC ’97 2.0 compliant Audio.
- 100/10 Base-T Ethernet LAN w/WakeOnLan (WOL) & Pre boot eXecution Environment (PXE) functions.
- On-board hardware monitoring ADM/ACPI.
- M-Systems DiskOnChip flash storage device support.
- Compact Flash storage device option.
- Internal Hard Disk Drive option (up to 10GB).
- Internal Floppy Disk Drive option.
- PS/2 mouse port
- PS/2 keyboard port
- Serial port (COM1)
- Parallel port (LPT1)
- Universal Serial Bus (USB) ports (USB1 & USB2)
- Mic, line-in, and line-out ports
- SVGA port
- External ATX power supply (50-Watt)

XL2000 Standard Features

In addition to the features above, the XL2000 is also equipped with the following items:

- 1 x ISA/PCI riser card (supports qualified industry expansion cards including: modems, token ring, ISDN, video conferencing, multiple serial port, wireless LAN, etc,.)

XL2000 Optional Features

The following optional items are available for use in the XL2000:

- 24X CD-ROM drive with a slim form factor

NetXpress XL Components

The NetXpress XL Series thin client consists of the following components:

- P5 Motherboard
- PS/2 Keyboard
- PS/2 Mouse
- 50-Watt ATX external power supply
- Thin-client case with the following dimensions:

XL1000 case dimensions (W x H x D):	9.5 x 1.3 x 8.6 in. 24 x 3.5 x 22 cm
XL2000 case dimensions (W x H x D):	9.5 x 1.9 x 8.6 in. 24 x 5.0 x 22 cm

Precautions

This section is written to protect both you and the system. Please read this section carefully to maximize system service life.

Checking the Line Voltage

The operating voltage for the switching power should cover the range of 90 VAC~265 VAC or the system may be damaged.

Table 1: Line Voltage Information

Rating	Line Voltage Tolerance	Frequency
100 VAC~240 VAC	90 VAC~264 VAC	50/60 Hz

Caution: Use only the external switching power adapter unit that came with your NetXpress XL unit. Using a different switching power adapter may cause system damage.

Environmental Conditions

Place your NetXpress XL on a solid, level surface. Allow enough room for the rear panels to ensure easy access to I/O ports.

Avoid installing the system in an extremely hot or cold environment. Consult the following information for suitable operating and non-operating temperature ranges.

Operating temperature range: 32 °F~104 °F (0 °C~40 °C)
Non-operating temperature range: -14 °F~140 °F (-10 °C~60 °C)
Lowest operating ambient temperature: 32 °F (0 °C)

With CPU heat sink and fan:
Operating temperature range: 32 °F~85 °F (0 °C~29 °C)
Non-operating temperature range: -14 °F~140 °F (-10 °C~60 °C)
Lowest operating ambient temperature: 32 °F (0 °C)

Avoid moving the system rapidly from a hot place to a cold place or vice versa. Otherwise, damage can result from condensation forming inside the system. Keep the system away from damp air, water, and dust.

Operating ambient humidity: 0%~80% (non-condensing)
Non-operating relative humidity: 0%~80% (non-condensing)

Do not locate the system in places with strong vibrations. Strong vibrations may cause serious damage to the internal hard disk. To avoid interference with other electronic equipment, do not locate the system directly adjacent to a radio, television, or other communication system.

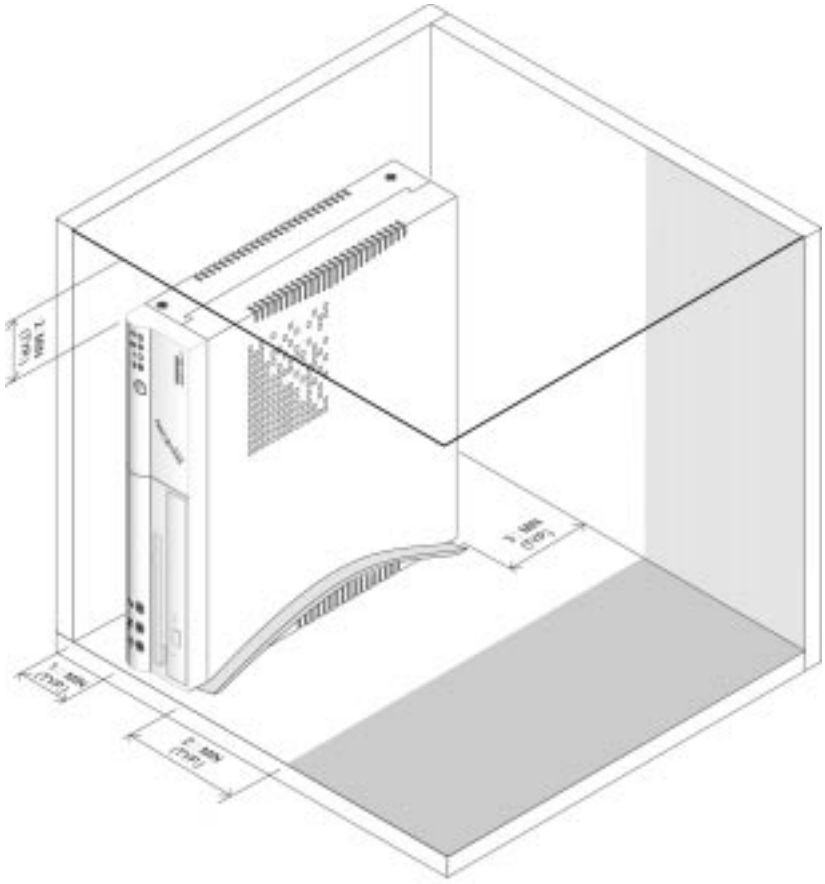
Caution: Avoid placing liquids near the system.

System Handling Instructions

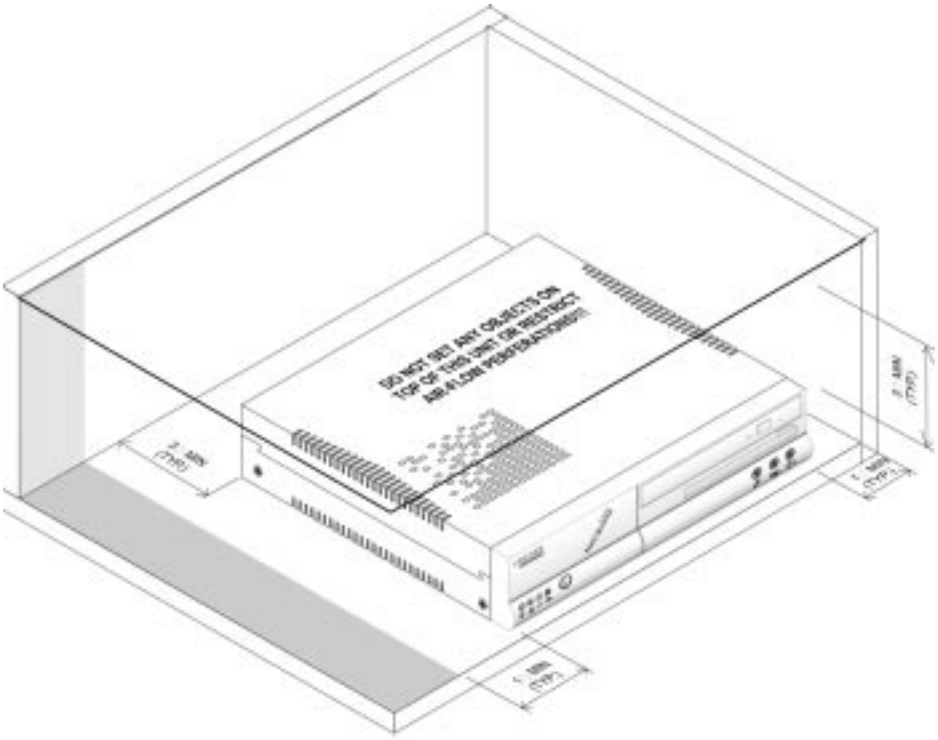
It is recommended you do not place objects directly on top of the NetXpress XL thin client as this may overheat the unit and may cause permanent damage, which may void your warranty. Please follow the recommended postioning diagrams below.

Recommended Positioning

Refer to the illustrations on the following pages for recommended positioning.



XL Series Vertical Mount Position



XL Series Horizontal Mount Position

Caution: Do not place any objects on top of the unit, regardless of vertical or horizontal positioning. Do not restrict air flow to vent holes in the case under any circumstances.

System Overview

Case Design

The NetXpress XL case encloses the motherboard and other important system components. The heart of the system is the XL motherboard, which contains the CPU, RAM, BIOS, and LAN adapter.

Caution: The XL Series cases are fitted with ventilation holes to facilitate heat dissipation. Do not obstruct the ventilation holes under any circumstances or the device could become inoperative.

Both the XL1000 and XL2000 can support optional floppy, hard disk drive and compact flash module. However, the XL2000 provides additional support for a CD-ROM drive as well as an expansion slot for a PCI/ISA adapter. Please consult your sales representatives for supported combinations of these options.

Note: If the compact flash module is incorporated in the XL2000 the PCI/ISA riser card cannont be used.

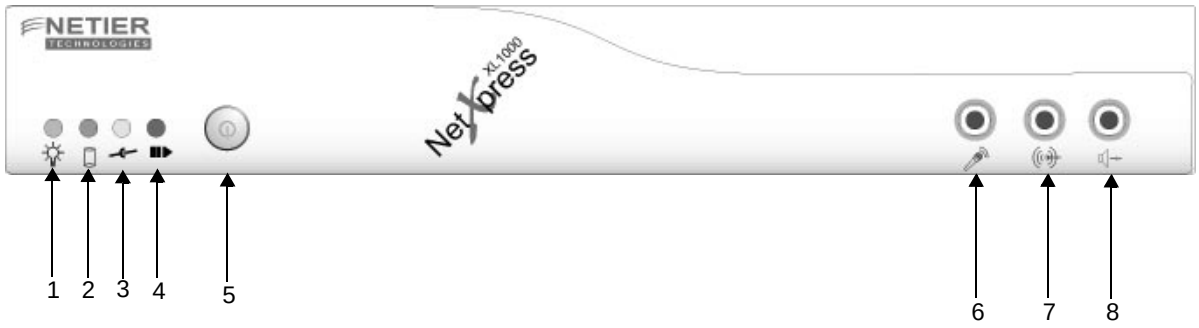
XL1000 Case

XL2000 Case

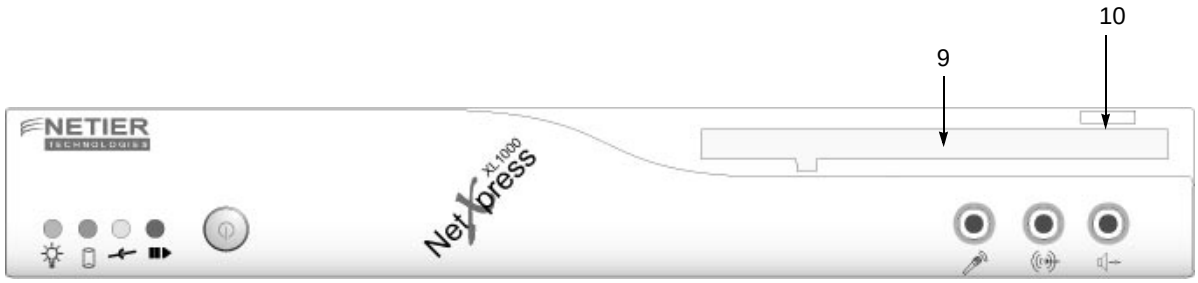
Figure 1. NetXpress XL Series Cases

NetXpress XL1000 Front Panel

Figure 2 illustrates the NetXpress XL1000 front panels.



XL1000 Without 3.5-in. Floppy Disk Drive



XL1000 With 3.5-in. Floppy Disk Drive

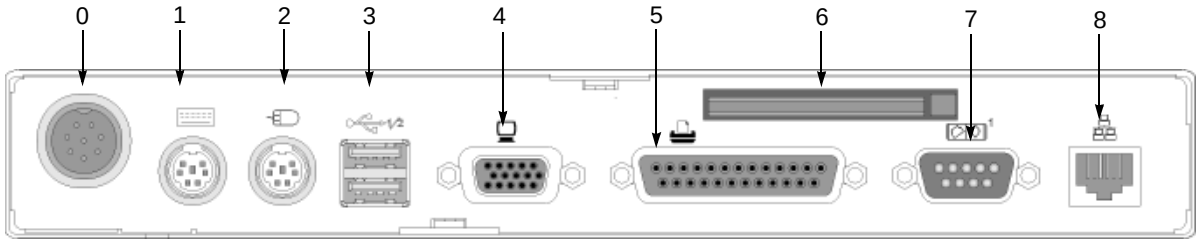
Figure 2. NetXpress XL1000 Front Panels

Table 2: XL1000 Front Panel Components

Location	Description
1	Power LED (blinking denotes suspend mode)
2	HDD/DiskOnChip Activity LED
3	LAN Connection LED
4	LAN Activity LED
5	Power On/Off
6	Microphone jack
7	Audio Line In
8	Speaker Out
9	Floppy Disk Drive (Optional)
10	Floppy diskette ejection button (if equipped)

NetXpress XL1000 Rear Panel

Figure 3 illustrates The NetXpress XL1000 rear panel.



XL1000 Rear Panel

Figure 3. NetXpress XL1000 Rear Panel

Table 3: XL1000 Rear Panel

Location	Description
0	External ATX power supply input
1	PS/2 Keyboard Port
2	PS/2 Mouse Port
3	USB Ports
4	VGA Port
5	Parallel Port
6	Compact Flash Module (optional)
7	Serial Port
8	Ethernet RJ45 connector

Note: Full use of all ports is dependent upon the operating system selected and the presence of proper drivers.

NetXpress XL2000 Front Panel

Figure 4 and Figure 5 illustrate the NetXpress XL2000 front panel.

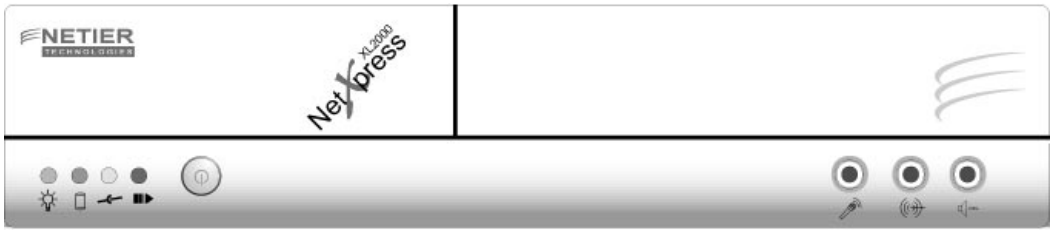


Figure 4. NetXpress XL2000 Front Panel with no drive support

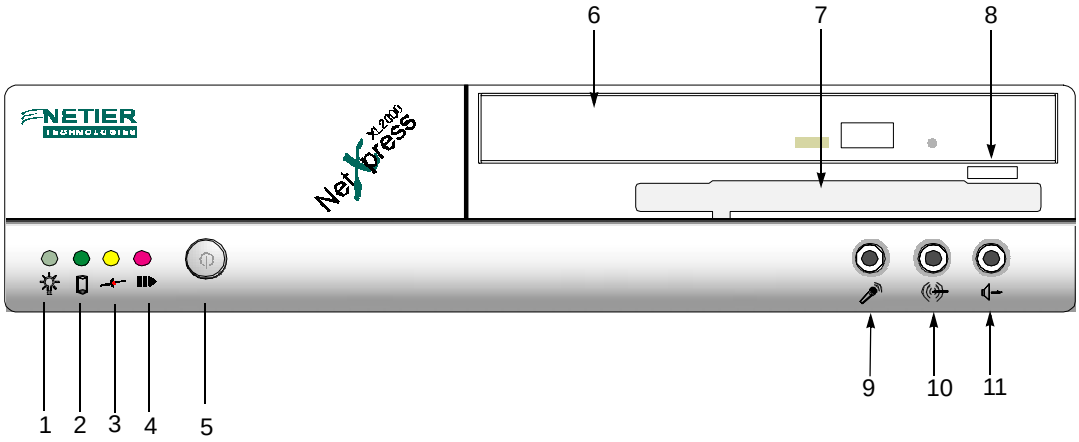


Figure 5. NetXpress XL2000 Front Panel with CD-ROM & floppy support options

Table 4: XL2000 Front Panel

Location	Description
1	Power LED (blinking denotes suspend mode)
2	HDD/DiskOnChip Activity LED
3	LAN Connection LED
4	LAN Activity LED
5	Power On/Off
6	CD-ROM drive (optional)
7	Floppy disk drive (optional)
8	Floppy diskette eject button (if equipped)
9	Mic
10	Line In
11	Speaker Out

NetXpress XL2000 Rear Panel

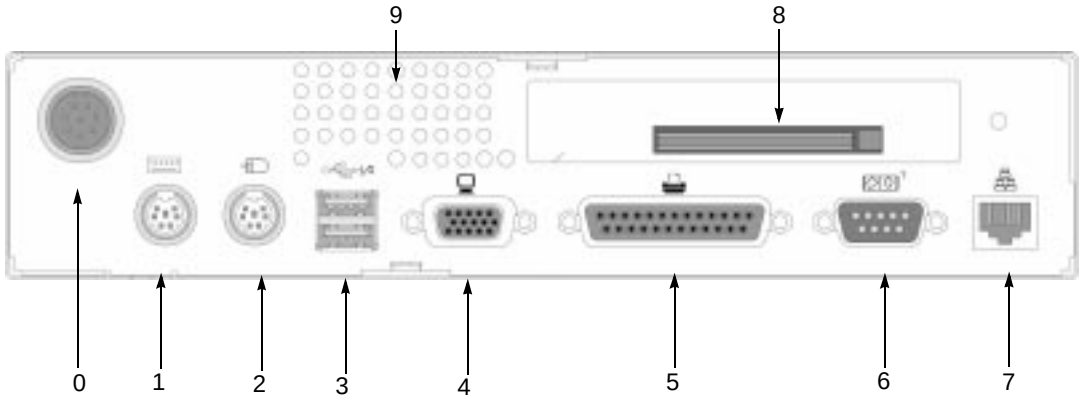


Figure 6. NetXpress XL2000 Rear Panel with Compact Flash Module

Table 5: XL2000 Rear Panel

Location	Description
0	External ATX power supply input
1	PS/2 Keyboard Port
2	PS/2 Mouse Port
3	USB Ports
4	VGA Port
5	Parallel Port
6	Serial Port
7	Ethernet RJ45 connector
8	Compact Flash Module (Optional)
9	System Ventilation (fan option available)

Caution: When connecting or disconnecting components or equipment, ensure the computer and related equipment are turned off and your computer is disconnected from the power source. Plugging or unplugging any item when the computer is receiving power can cause power surges and damage your computer.

Note: Full use of all ports is dependent upon the operating system selected and the presence of the proper drivers.

Technical Data

The following section details technical data for the NetXpress XL1000 and XL2000 thin-client computers.

NetXpress XL Technical Data

Board Specifications

NetXpress XL Series thin-client access devices are powered by the P5 Motherboard. The table below lists P5 motherboard specifications:

CPU	ZIF Socket for Socket-7/Super-7 processors Supports Pentium class processors up to 600MHz as available.
Core Chip	Trident CBi7 North bridge controller with integrated AGP video VIA VT82C686A South bridge controller with integrated SoundBlaster Pro Audio
BIOS	2Mbit Award Flash BIOS, supports P&P APM1.2 BIOS quick booting CMOS recall selection Support for Wake On LAN Support for Pre boot eXecution Environment (PXE) function Optional customer splash screen from BIOS booting screen
L2 Cache	512KB PB-SRAM on-board, using 64KX64 chip
System Memory	Two DIMM sockets, supporting 8MB to 128MB, each 16/32/64MB EDO, FP, PC/100 SDRAM memory modules (currently available) Advanced memory ECC/EC function
IDE interface	Enhanced IDE interface x 1, supports 2-IDE devices, UltraDMA33 master mode PCI-EIDE
Front Side Bus	60~100MHz operation with synchronous or pseudo-synchronous mode
PCI Bus Controller	PCI-2.2 compliant 32-bit 3.3v with 5v tolerant inputs
Super I/O Controller	Integrated AGP 64-bit single cycle 2D/3D graphics accelerator Supports 2~8MB of Frame Buffer Extended screen resolution up to 1600x1200 Direct-X 6 and OpenGL ICD API Integrated 24-bit 230MHz true color DAC VMI to MPEG-1/MPEG-2 and video decoder Real time DVD MPEG-2 and AC-3 playback
Audio	Integrated hardware SoundBlaster Pro/Direct Sound AC '97 compliant digital audio controller with PCI master interface Hardware assisted FM synthesis Standard v1.0/v2.0 codec I/F for single or cascaded AC '97 codecs
USB	Universal Serial Bus ports x 2 USB v1.1 and Intel Universal HCI v1.1 compatible
Keyboard	1 x Mini-DIN connector for PS/2 keyboard

Mouse	1 x Mini-DIN connector for PS/2 mouse
On-board Hardware Monitoring	CPU temperature monitoring CPU core, system power voltage detection
LAN	Realtek RTL-8139B(F) 100Base-TX/10Base-T Ethernet with PCI master interface Support for Wake On LAN Support for Pre-boot eXecution Environment (PXE) function
On-board Flash File System	M-Systems DOC2000 socket x 1 (32-pin DIP JEDEC standard) M-Systems DIM2000 socket x 1 (144-pin SoDIMM future option)
Compact Flash	Compact Flash daughter card w/ejector (option)
Switching Voltage Regulator	Switching voltage regulator on-board for full range processor voltage requirements.

Note: These specifications are subject to change without notice.

Motherboard Environmental and Mechanical Specifications

Operating Temperature range: Non-operating temperature range:	32 °F~104 °F (0 °C~40 °C) [With heat sink and fan] -14 °F~140 °F (-10 °C~60 °C)
Board Physical	W x D x H (overall) = 230mm (9-1/8") x 207mm (8-1/8") x 1.3mm (0.051")
CPU	ZIF Socket-7/Super Socket-7 support
Main Memory	2 x 168-pin DIMM sockets
L2 Cache	512KB on-board
Flash File System	1 x 32-pin DIP JEDEC standard socket 144-pin SoDIMM (future option)
Compact Flash	1 x IDE compact flash ejector header (optional)- Selectable as master or slave drive
Expansion Bus	1 x PCI/ISA Riser card support(XL 2000)
Primary IDE header	1 x 44-pin 1mm pitch header
Serial port	1 x 9-pin D-SUB RS232 FIFO (16550 compatible) Serial port connector
Parallel port	1 x 25-pin D-SUB Parallel port (SPP/EPP/ECP) connector
USB ports	2 x USB connectors/stacked
SVGA port	1 x 15-pin High Density D-SUB
Audio ports	1 Microphone Input 1 Stereo Audio Output 1 Stereo Audio Input
Keyboard port	1 PS/2 style keyboard port
Mouse port	1 PS/2 style mouse port
Power	1 (8-pin) DC power input supporting external ATX power supply
Power Switch	1 Momentary "Soft" power switch. Bezel mounted ON/OFF/SUSPEND

Certifications	Power Module - UL / C-UL / CE / TUV / CSA Case - FCC / CE
XL1000	W x D x H (overall) = 240mm (9-1/2") x 220mm (8-9/16") x 35mm (1-3/16")
XL2000	W x D x H (overall) = 240mm (9-1/2") x 220mm (8-9/16") x 50mm (1-15/16")
Power Supply	External 50w AC Auto switching - Supports ATX function power connection

Jumper Location Diagram

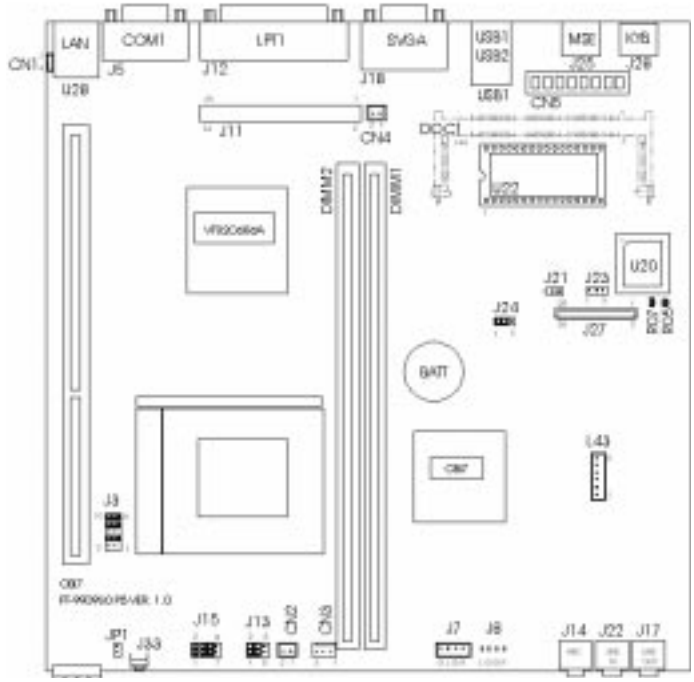


Figure 7. XL 1.0 Motherboard Jumper Location Diagram

Memory Configuration

SYSTEM MEMORY CONFIGURATION

The core chipset of the NetXpress XL Series accepts 16/32/64/128/256MB FP, EDO, PC-100, or PC-66 SDRAM Modules **as available**.

> **Note:** Any memory modules used in the NetXpress SL Series need to conform to the proper specifications. Please contact your reseller or Netier Technical support for more information.

CACHE RAM CONFIGURATION

Table 6 lists the L2 cache RAM configuration.

Table 6: L2 Cache RAM Configurations

Capacity	SRAM Type	Quantity	Location
512 KB	64 K x 64 Pipeline	1	U12

VGA MEMORY CONFIGURATION

Video memory is reserved from the main system memory via BIOS control settings. Optional memory settings include 2/4/8MB.

Jumper Settings

Use the following jumper setting configurations to configure specific CPU's and enable, disable, or change system functions.

Note: Please refer to Figure 7 on page 17 for all jumper locations.

CMOS Data Clean Function: J24

Table 7 lists the CMOS data clean function jumper settings.

Table 7: CMOS Data Clean Function Jumper Settings

CMOS Data	J24
Clean	2-3
Normal (default)	1-2

Address Selection Reserves:

Address selection reserve settings.

Table 8: Address Selection Reserve Settings

Address	1st Jumper	2nd Jumper	Reserved
0C800H - 0C9FFH	R06	R08	VGA
0CC00H - 0CDFFH	R06	R07	VGA
0D000H - 0D1FFH	R05	R08	OPT. ROM
0D400H - 0D5FFH	R05	R07	D.O.C.
0D800H - 0D9FFH	R04	R08	BOOT ROM
0DC00H - 0DDFFH	R04	R07	BOOT ROM

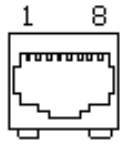
Connector Descriptions

The following information describes the pin numbers and assignments for the XL 1.0 Motherboard connectors.

LAN (10/100 Base-T RJ45 Connector): U28

The following table lists the LAN connector pin numbers and assignments.

Table 9: LAN Connector Pin Numbers and Assignments

Pin #	Assignment	Figure
1	Transmit output (+)	
2	Transmit output (-)	
3	Receive input (+)	
4	NC	
5	NC	
6	Receive input (-)	
7	NC	
8	NC	

Parallel Port (D-SUB 25-pin Female Connector): J12

Table 10 lists the parallel port connector pin numbers and assignments. See Figure 8 on page 19 for more information.

Table 10: Parallel Port 1 Pin Numbers and Assignments

Pin #	Assignment	Pin #	Assignment
1	Strobe (-)	14	Auto feed (-)
2	Data bit 0	15	Error (-)
3	Data bit 1	16	INIT (-)
4	Data bit 2	17	SLCT IN (-)
5	Data bit 3	18	Signal Ground
6	Data bit 4	19	Signal Ground
7	Data bit 5	20	Signal Ground
8	Data bit 6	21	Signal Ground
9	Data bit 7	22	Signal Ground
10	ACK (-)	23	Signal Ground
11	Busy	24	Signal Ground
12	Paper empty	25	Signal Ground
13	SLCT		

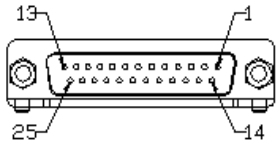
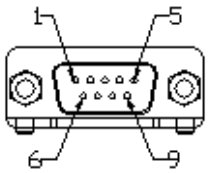


Figure 8. Parallel Port (D-SUB 25-Pin Female Connector)

RS232 COM1 (D-SUB 9-pin Male Connector): J5

Table 11 lists the RS232 COM1pin numbers and assignments.

Table 11: RS232 COM1/COM2 Pin Numbers and Assignments

Pin #	Assignment	Figure
1	Data carrier detect	
2	Receive data	
3	Transmit data	
4	Data Terminal ready	
5	Signal Ground	
6	Data set ready	
7	Request to send	
8	Clear to send	
9	Ring indicator	

Wake on Modem Connector (Pin-header 3pin) : J23

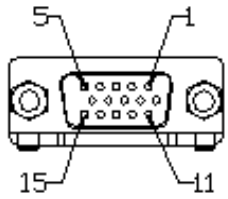
Table 12: Wake on Modem Connector

Pin #	Assignment	Figure
1	+5Vcc Standby	
2	Ground	
3	Ring-In (R1)	

VGA Monitor (D-SUB 15-pin Female Connector): J18

Table 13 lists VGA monitor pin numbers and assignments.

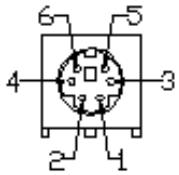
Table 13: VGA Monitor Pin Numbers and Assignments

Pin #	Assignment	Figure
1	Red signal	
2	Green signal	
3	Blue signal	
4	NC	
5	Ground	
6	Red ground	
7	Green ground	
8	Blue ground	
9	VCCF	
10	Ground	
11	NC	
12	MID1	
13	H sync.	
14	V sync.	
15	MID3	

PS2 Mouse (Mini Din 6-pin): J25

Table 14 lists PS2 mouse pin numbers and assignments.

Table 14: PS2 Mouse Pin Numbers and Assignments

Pin #	Assign.	Figure
1	Mouse data	
2	NC	
3	Ground	
4	+5 V	
5	Mouse clock	
6	NC	

KEYBOARD (PC AT STANDARD OR PS2 TYPE): J28

Table 15 and Table 16 list pin numbers and assignments for PS2 keyboards.

Table 15: PS2 Type Keyboard Pin Numbers and Assignments

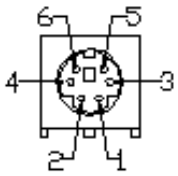
Pin #	Assignment	Figure
1	Keyboard data	
2	Mouse Data	
3	Ground	
4	+5 V	
5	Keyboard clock	
6	Mouse Clock	

Table 16 lists +12 V DC fan power pin numbers and assignments

+12 V DC Fan Power: CN2, CN4

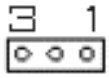
Table 16: +12 V DC Fan Power pin numbers and assignments

Pin #	Assignment	Figure
1	Ground	
2	+12 V	

Fan connector (Pin-header 3pin) : CN3

Table 17 list the fan connector pin header assignments.

Table 17: Fan connector pin header assignments

Pin #	Assignment	Figure
1	Ground	
2	CPUFN	
3	CPUFAN1	

IDE Hard Disk Connector (Pin-header 44-pin): J11

Table 18 lists IDE hard disk connector pin numbers and assignments.

Table 18: IDE Hard Disk Connector Pin Numbers and Assignments

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Reset	16	Data bit 14	31	IRQ 14
2	Ground	17	Data bit 0	32	NC
3	Data bit 7	18	Data bit 15	33	Disk address 1
4	Data bit 8	19	Ground	34	NC
5	Data bit 6	20	NC	35	Disk address 0
6	Data bit 9	21	IDE DRQ	36	Disk address 2
7	Data bit 5	22	Ground	37	Disk chip select 0
8	Data bit 10	23	Disk Write	38	Disk chip select 1
9	Data bit 4	24	Ground	39	Disk LED
10	Data bit 11	25	Disk read	40	Ground
11	Data bit 3	26	Ground	41	+5 V
12	Data bit 12	27	Disk ready	42	+5 V
13	Data bit 2	28	NC	43	Ground
14	Data bit 13	29	IDE DACK	44	NC
15	Data bit 1	30	Ground		

Figure 9. 44-Pin IDE Hard Disk Connector

26-pin FPC Connector Pin Numbers and Assignments: J27

Table 19: 26-pin FPC Connector Pin Numbers and Assignments

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Vcc	10	Motor on 0	19	Ground
2	Index	11	NC	20	Track 00
3	Vcc	12	Data direction	21	Ground
4	Driver select 2	13	Density select	22	Write protected
5	Vcc	14	Step motor active	23	Ground
6	Disk change	15	NC	24	Read data
7	NC	16	Write data	25	Ground
8	NC	17	Ground	26	Head select
9	NC	18	Write gate		

Power Input for FT-8006A External ATX Power Adapter (Pin-header 8-pin): CN5

Table 20 lists the FT-8006A external power adapter pin numbers and assignments.

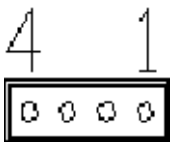
Table 20: FT-8006A External Power Adapter Power Input Pin Numbers and Assignments

Pin #	Assignment
1	+5V IN
2	+5V IN
3	+12V IN
4	Ground
5	-12V IN
6	Power On signal
7	+5V Standby
8	Ground

CD-In Connector (Pin-header 4-pin): J7

Table 21 lists the CD-in connector pin numbers and assignments.

Table 21: CD-In Connector Pin Numbers and Assignments

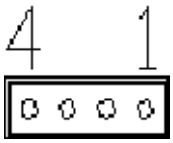
Pin #	Assignment	Figure
1	Right channel	
2	Ground	
3	Left channel	
4	Ground	

CD-IN CONNECTOR (PIN-HEADER 4-PIN): J8 (OPTIONAL)

Table 22 lists the CD-in connector pin numbers and assignments.

Note: Header is not populated by default.

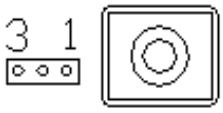
Table 22: CD-In Connector Pin Numbers and Assignments

Pin #	Assignment	Figure
1	Right channel	
2	Ground	
3	Ground	
4	Left channel	

Audio Line-in Connector: J22

Table 23 list line-in connector pin numbers/assignments.

Table 23: Line-In Connector Pin Numbers and Assignments

Pin #	Assignment	Figure
1	Right channel	
2	Ground	
3	Left channel	

Mic Input Connector: J14

Table 24 lists the microphone input connector pin numbers and assignments.

Table 24: Microphone Input Connector Pin Numbers and Assignments

Pin #	Assignment	Figure
1	Microphone signal	
2	Ground	
3	NC	

Audio Line-out Connector: J17

Table 25 lists the line-out connector pin numbers and assignments.

Table 25: Line-Out Connector Pin Numbers and Assignments

Pin #	Assignment	Figure
1	Right channel	
2	Ground	
3	Left channel	

Input/Output Voltage Selection: J1

Table 26 lists the I/O voltage selection CPU's.

Table 26: CPU I/O voltage selection

Voltage	Assignment
3.5V	1-2
3.3V	Open (default)

144 pin DiskOnChip DIMM (DOC1) (Future Option)

Table 27: 144 pin DiskOnChip DIMM Pin Number Descriptions

Pin Number	Description	Pin Number	Description	Pin Number	Description
1	GND	49	D13	97	D22
2	GND	50	No Connect	98	No Connect
3	D0	51	D14	99	D23
4	No Connect	52	No Connect	100	No Connect
5	D1	53	D15	101	VCC
6	No Connect	54	No Connect	102	VCC
7	D2	55	GND	103	A6
8	No Connect	56	GND	104	A7
9	D3	57	No Connect	105	A8
10	No Connect	58	No Connect	106	A11
11	VCC	59	No Connect	107	GND
12	VCC	60	No Connect	108	GND
13	D4	61	No Connect	109	A9
14	No Connect	62	No Connect	110	A12
15	D5	63	VCC	111	A10
16	No Connect	64	VCC	112	No Connect
17	D6	65	RESET#	113	VCC
18	No Connect	66	No Connect	114	VCC
19	D7	67	WE#	115	No Connect
20	No Connect	68	No Connect	116	No Connect
21	GND	69	No Connect	117	No Connect
22	GND	70	No Connect	118	No Connect
23	CE#	71	No Connect	119	GND
24	No Connect	72	No Connect	120	GND
25	No Connect	73	OE#	121	D24
26	No Connect	74	No Connect	122	No Connect
27	VCC	75	GND	123	D25

Table 27: 144 pin DiskOnChip DIMM Pin Number Descriptions

28	VCC	76	GND	124	No Connect
29	A0	77	No Connect	125	D26
30	A3	78	No Connect	126	No Connect
31	A1	79	No Connect	127	D27
32	A4	80	No Connect	128	No Connect
33	A2	81	VCC	129	VCC
34	A5	82	VCC	130	VCC
35	GND	83	D16	131	D28
36	GND	84	No Connect	132	No Connect
37	D8	85	D17	133	D29
38	No Connect	86	No Connect	134	No Connect
39	D9	87	D18	135	D30
40	No Connect	88	No Connect	136	No Connect
41	D10	89	D19	137	D31
42	No Connect	90	No Connect	138	No Connect
43	D11	91	GND	139	GND
44	No Connect	92	GND	140	GND
45	VCC	93	D20	141	No Connect
46	VCC	94	No Connect	142	No Connect
47	D12	95	D21	143	VCC
48	No Connect	96	No Connect	144	VCC

Pin Out

Table 28 list the pin name and description for the DiskOnChip connector.

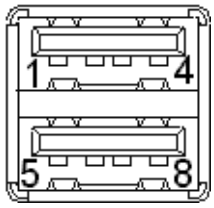
Table 28: DOC Pin name and description

Pin Name	Description	Pin Number	Direction
A0 - A12	Address bus	4-12,23,25-27	Input
D0 - D7	Data bus	13-15,17-21	I/O
CE/	Chip Enable	22	Input
OE/	Output Enable	24	Input
WE/	Write Enable	31	Input
NC	Not Connected	1,2,3,28,29,30	
VCC	Power	32	
GND	Ground	16	

USB Connector (Dual Stack): USB1

Table 29 list the USB connector pin number and assignment.

Table 29: USB connector pin number and assignment.

Pin #	Assignment	Figure
1	+5V	
2	USB Port 0 Data -	
3	USB Port 0 Data +	
4	Ground	
5	+5V	
6	USB Port 1 Data -	
7	USB Port 1 Data +	
8	Ground	

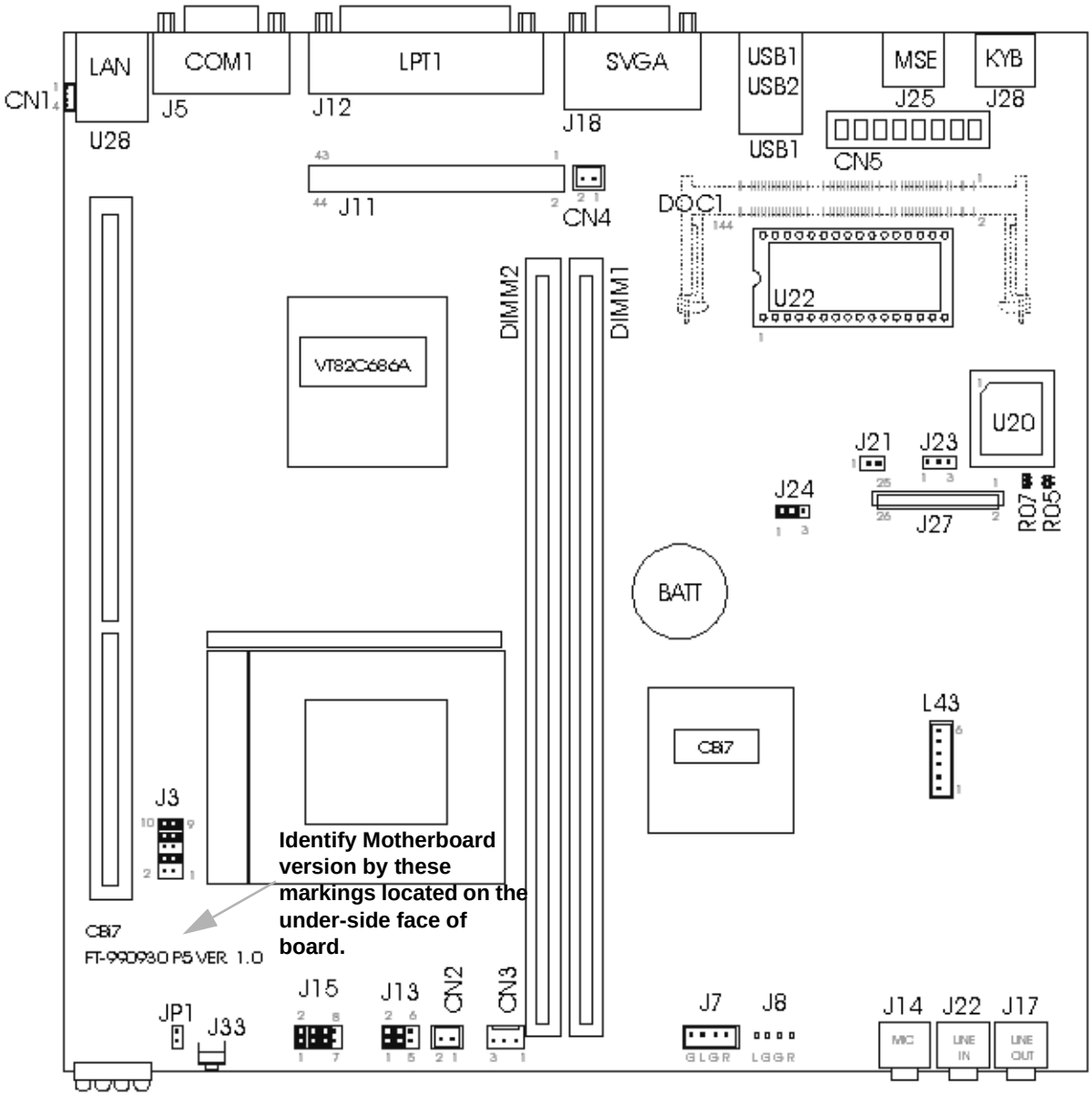
Test Pin Header: L43

Table 30 list pin number and assignment for the test pin header.

Table 30: Test Pin header pin number assignment

Pin #	Assignment	Figure
1	+5V	
2	Ground	
3	+3.3V Standby	
4	+3V	
5	+2.5V	
6	+2V	

CPU Technical Information



The following charts reflect jumper locations, settings, and their respective functions for the above referenced motherboard design. The last section reflects a sample listing of Socket-7 CPU's available and all related jumper settings necessary for those specific CPU's.

Note:

- Jumper locations and settings shown here are for reference ONLY.
- Jumper selections shown in this layout are ONLY for "Passive Heat Sink" installation using an AMD K6-2E (AFZ) low voltage CPU set to 250MHz & 1.8V.
- Set jumper selections for all other CPU's according to charts.

CPU Core Voltage Selection

Table 31: CPU Core Voltage Selection

Vcore (Vcc2)	J3				
	1-2	3-4	5-6	7-8	9-10
1.5	OFF	OFF	ON	OFF	ON
1.6	OFF	ON	ON	OFF	ON
1.7	OFF	OFF	OFF	ON	ON
1.8	OFF	ON	OFF	ON	ON
1.9	OFF	OFF	ON	ON	ON
2.0	OFF	ON	ON	ON	ON
2.1	ON	OFF	OFF	OFF	OFF
2.2	OFF	ON	OFF	OFF	OFF
2.3	ON	ON	OFF	OFF	OFF
2.4	OFF	OFF	ON	OFF	OFF
2.5	ON	OFF	ON	OFF	OFF
2.6	OFF	ON	ON	OFF	OFF
2.7	ON	ON	ON	OFF	OFF
2.8	OFF	OFF	OFF	ON	OFF
2.9	ON	OFF	OFF	ON	OFF
3.0	OFF	ON	OFF	ON	OFF
3.1	ON	ON	OFF	ON	OFF
3.2	OFF	OFF	ON	ON	OFF
3.3	ON	OFF	ON	ON	OFF
3.4	OFF	ON	ON	ON	OFF
3.5	ON	ON	ON	ON	OFF

CPU/Host Ratio: J13

Table 32: CPU/Host Ratio

CPU/HOST RATIO	J13		
	1-2	3-4	5-6
1.5	OFF	OFF	OFF
2.0	ON	OFF	OFF
2.5	ON	ON	OFF
3.0	OFF	ON	OFF
3.5	OFF	OFF	OFF
4.0	ON	OFF	ON
4.5	ON	ON	ON
5.0	OFF	ON	ON
5.5	OFF	OFF	ON
6.0	ON	OFF	OFF

CPU Clock Selection: J15

Table 33: CPU Clock Selection Settings

J15				CPU	RATIO	PCI
1-2	3-4	5-6	7-8			
OFF	OFF	OFF	OFF	60	2	30
ON	OFF	OFF	OFF	66.8	2	33.4
OFF	ON	OFF	OFF	70	2	35
ON	ON	OFF	OFF	75	3	25
OFF	OFF	OFF	ON	75	2	37.5
OFF	OFF	ON	OFF	80	3	26.67
ON	OFF	OFF	ON	80	2	40
ON	OFF	ON	OFF	83.3	3	27.76
OFF	ON	OFF	ON	83.3	2	41.55
OFF	ON	ON	OFF	95.25	3	31.75
ON	ON	ON	OFF	100	3	33.33

Reset Switch: J21 (Use "Momentary" contact switch ONLY)

Table 34: Reset Switch Settings

Status
Open (default)
Short (reset state)

CMOS Data Clean Function : J24

Table 35: CMOS Data Clean Function

CMOS data	J24
Clean	2-3
Normal (default)	1-2

Address selection reserves: R04, R05, R06, R07 (For Reference Only)

Table 36: Address Selection Reserves

Address	1st Jumper	2nd Jumper	Reserved
0C800H - 0C9FFH	R06	R08	VGA
0CC00H - 0CDFFH	R06	R07	VGA
0D000H - 0D1FFH	R05	R08	OPT. ROM
0D400H - 0D5FFH	R05	R07	D.O.C.
0D800H - 0D9FFH	R04	R08	BOOT ROM
0DC00H - 0DDFFH	R04	R07	BOOT ROM

Sample CPU selection: J13, J15

Table 37: Sample CPU Selection

CPU	J13			J15			
	1-2	3-4	5-6	1-2	3-4	5-6	7-8
Pentium 100MHz	Open	Open	Open	Close	Open	Open	Open
Pentium 120MHz	Close	Open	Open	Open	Open	Open	Open
Pentium 133MHz	Close	Open	Open	Close	Open	Open	Open
Pentium 150MHz	Close	Close	Open	Open	Open	Open	Open
Pentium 166MHz	Close	Close	Open	Close	Open	Open	Open
Pentium 200MHz MMX	Open	Close	Open	Close	Open	Open	Open
Pentium 233MHz MMX	Open	Open	Open	Close	Open	Open	Open
AMD K6/ 233MHz(AFR)	Open	Open	Open	Close	Open	Open	Open
AMD K6/ 266MHz(AFR)AM D K6-2/266MHz	Close	Open	Close	Close	Open	Open	Open
AMD K6-2/ 300MHz	Open	Close	open	Close	Close	close	Open
AMD K6-2/ 333MHz	Open	Open	Open	Open	Close	Close	Open
AMD K6-2/ 350MHz	Open	Open	Open	Close	Close	Close	Open
AMD K6-3/ 400MHz	Close	Open	Close	Close	Close	Close	Open
AMD K6-3/ 450MHz	Close	Close	Close	Close	Close	Close	Open

Appendix A—BIOS Setup

The following model was selected as an example to assist you in setting up the system BIOS. Please check with your supplier for additional examples or updated BIOS information.

Table 38: BIOS Setup Example Model Specifications

Models	NetXpress XL1000 and XL2000
CPU	Intel Pentium (MMX) 100/133/166/200/233
Motherboard	XL 1.0
BIOS	AWARD

Netier NetXpress XL thin client BIOS is supplied by Award Software, Inc. AWARD BIOS Flash ROM contains a built-in setup program that allows you to modify the basic system configuration. This information is stored in the CMOS chipset RAM, which contains its own battery; therefore, the setup information is retained when the power is turned off.

Entering Setup

Entering BIOS Setup Prior to Booting

Power on the computer and immediately press **Del** to enter BIOS setup.

When the following message appears briefly at the bottom of the screen during the POST (Power On Self Test), press **Del** to enter system BIOS setup:

```
TO ENTER SETUP BEFORE BOOT PRESS the <Del> KEY
```

If the message disappears before you can press **Del** then restart the system and attempt to enter system BIOS again.

To restart the system

Turn the power switch OFF and then ON again, or press **Ctrl**+**Alt**+**Del**.

Note: If you do not press the keys to enter BIOS setup at the correct time and the system does not boot, the error message below will be displayed and you will be asked to select the desired option.

```
PRESS <F1> TO CONTINUE, <DEL> TO ENTER SETUP
```

Control Keys

Table 39 lists the BIOS setup control keys and their related functions.

Table 39: BIOS Setup Control Keys and Functions

Key	Function
Up arrow	Move to the previous item
Down arrow	Move to the next item
Left arrow	Move to the item on the left side
Right arrow	Move to the item on the right side
Esc	Main Menu—Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu—Exit current page and return to Main Menu
PgUp/+	Increase the numeric value or make changes
PgDn/-	Decrease the numeric value or make changes
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu

Table 39: BIOS Setup Control Keys and Functions

F2/[Shift]+F2	Change color from a total of 16 colors. F2 to select color forward, [Shift] F2 to select color backward
F3	Reserved
F4	Reserved
F5	Restore the previous CMOS value from CMOS; only for Option Page Setup Menu
F6	Load the default CMOS value from the BIOS default table; only for Option Page Setup Menu
F7	Load the Setup default; only for Option Page Setup Menu
F8	Reserved
F9	Reserved
F10	Save all CMOS changes; only for Main Menu

Getting Help

Main Menu

A description of the selected (highlighted) setup function appears on the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press **F1** to display a small pop-up help window that describes the setup control key functions and possible uses for each key. Press **F1** or **Esc** to exit the Help window.

The Main Menu

Once you enter the AWARD BIOS CMOS Setup Utility, the Main Menu is displayed. The Main Menu allows you to select from ten setup functions and two exit choices. Use the arrow keys to select the desired item(s) and press **Enter** to accept or enter the sub-menu.

Figure 10 illustrates the AWARD BIOS CMOS Setup Utility Main Menu.

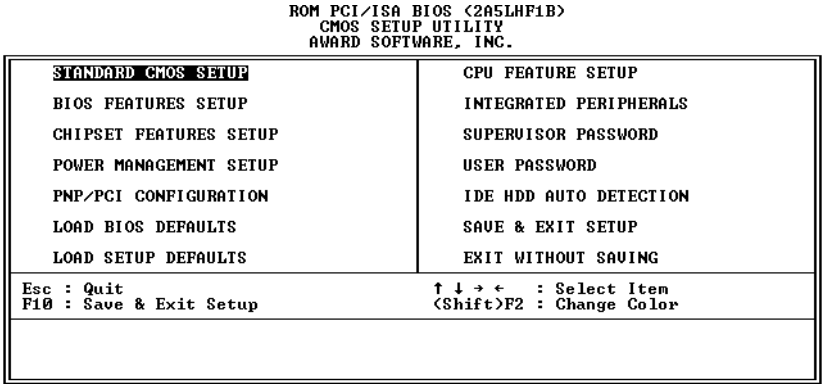


Figure 10. AWARD BIOS CMOS Setup Utility Main Menu

Standard CMOS Setup

This setup page includes all standard compatible BIOS items. See “Standard CMOS Setup Menu” on page 38 for details.

BIOS Features Setup

This setup page includes all AWARD special enhanced feature items. See “BIOS Features Setup Menu” on page 41 for details.

Chipset Features Setup

This setup page includes all chipset special feature items. See “Chipset Features Setup Menu” on page 46 for details.

Power Management Setup

The Power Management Setup category determines the system power consumption after selecting various items. See “Power Management Setup” on page 50 for details.

PnP/PCI Configuration

Use the PnP/PCI Configuration category to specify PnP OS or manually configure IRQ/DMA settings. See “PnP/PCI Configuration” on page 53 for details.

Load BIOS Defaults

BIOS defaults indicate the system parameter values at which the system would perform at the minimum level.

CPU Feature

Use the CPU feature to view the temperature and voltages of the CPU.

Load Setup Defaults

Setup defaults indicate the system parameter values at which the system would perform at the maximum level.

Integrated Peripherals

Use the Integrated Peripherals function to enable, disable or configure the on-board devices. See “Integrated Peripherals” on page 55 for details.

Supervisor Password and Password Setting

Use this function to change, set, or disable the password. The supervisor password allows you to limit access to both the system and Setup, or just to Setup. See “Setting the Password” on page 58 for details.

IDE HDD Auto Detection

Use the IDE HDD Auto Detection function to automatically detect and configure hard disk parameters. See “IDE HDD Auto Detection” on page 59 for details.

HDD Low Level Format

This function is the hard disk low level format utility. See “Hard Disk Low Level Format Utility” on page 62 for details.

Save and Exit Setup

Choose this function to save CMOS value changes and exit setup.

Exit Without Save

Choose this function to abandon all CMOS value changes and exit setup.

Standard CMOS Setup Menu

The items in the Standard CMOS Setup Menu are divided into 11 categories. Each category includes zero, one, or more than one setup item. Use the arrow keys to highlight the item, and then press **PgUp** (PU) or **PgDn** (PD) to select the desired for each item.

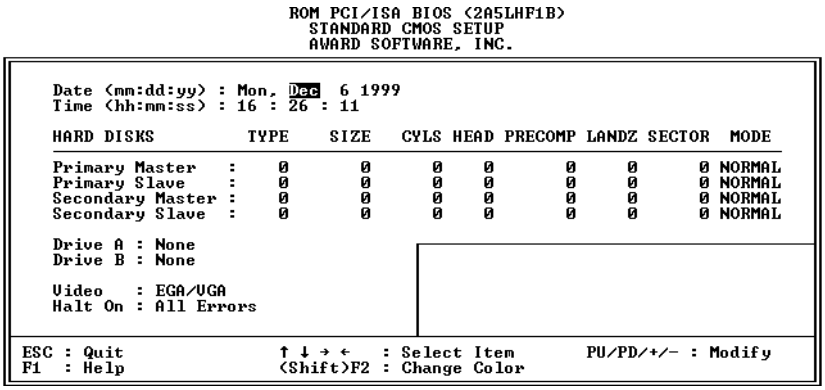


Figure 11. AWARD BIOS Standard CMOS Setup Screen

Date

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

day	The day of week, from Sun to Sat, is determined by the BIOS and is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can be keyed in using the numerical key pad
month	The month, January through December
year	The year, depending on the current year.

Note: All Netier NetXpress thin-client computers are Year 2000 compliant.

Time

The time format is <hour> <minute> <second>. The time is calculated based on 24-hour military time. For example, 1 p.m. is 13:00:00 hours.

Primary Master/Slave & Secondary Master/Slave

These categories identify the type of hard disk drives installed in the computer (C, D, etc.). Forty-five predefined types, one user definable type, and one automatic type for Normal BIOS are available. Type 1 to Type 45 are predefined. Type User is user-definable. Type Auto uses your computer's auto-definition.

Press **PgUp/+ or PgDn/**– to select a numbered hard disk type, or type the number and press **Enter**.

Note: Your drive specifications must match those in the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not listed in types 1–45, use *Type User* to manually define your drive type or use type Auto to automatically define your drive type.

If you select *Type User*, you must enter the related information from the keyboard and press **Enter**. The required information should be provided in your hard disk documentation.

- If the HDD is installed, select **Auto**.
- If a CD-ROM is installed, select **Auto**.
- If no hard disk or CD-ROM is installed, select **None** or **Auto** and press **Enter**.

CYLS	Number of cylinders
HEADS	Number of heads
PRECOMP	Write precom
LANDZONE	Landing zone
SECTORS	Number of sectors
MODE	HDD access mode

Drive A/B

This category identifies the type of floppy disk drives (A and/or B) installed in the computer.

Note: Select **1.44-MB, 3.5-in**. if a floppy disk drive is installed in the system.

None	No floppy drive installed
360-KB, 5.25-in.	5-1/4-inch, PC-type standard drive; 360-KB capacity
1.2-MB, 5.25-in.	5-1/4-inch, AT-type high-density drive; 1.2-MB capacity
720-KB, 3.5-in.	3-1/2-inch, double-sided drive; 720-KB capacity
1.44-MB, 3.5-in.	3-1/2-inch, double-sided drive; 1.44-MB capacity
2.88-MB, 3.5-in.	3-1/2-inch, double-sided drive; 2.88-MB capacity

Video

Use the Video category to select the adapter used for the primary system monitor. This adapter must match your video display interface and monitor.

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

Halt On

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

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

Memory

This is a display-only category determined by the BIOS Power On Self Test (POST).

BASE MEMORY

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

EXTENDED MEMORY

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

OTHER MEMORY

Other memory refers to the memory located in the 640 KB to 1024 KB address range. Other memory can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. This memory area is most often used for Shadow RAM.

TOTAL MEMORY

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

BIOS Features Setup Menu

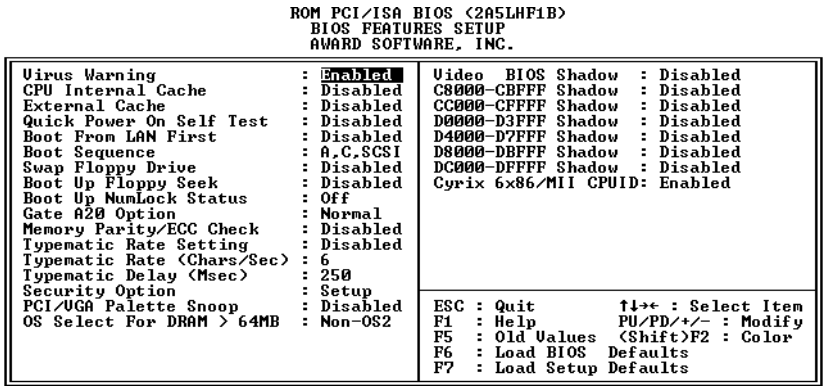
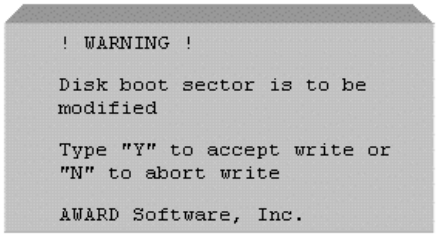


Figure 12. AWARD BIOS Features Setup Menu

Virus Warning

This category flashes on the screen. During and after system boot, any attempt to write to the boot sector or partition table of the hard disk drive halts the system, and the following error message appears. If this warning appears, run an anti-virus program to locate the problem.

Note: If you are installing a new operating system when this error message is displayed, you do not need to run an anti-virus program. Instead, type **Y** to accept and continue installation.



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 appears when anything attempts to access the boot sector or hard disk partition table.

Note: This function is available only for DOS and other operating systems that do not trap INT13.

CPU Internal Cache/External Cache

These categories accelerate memory access depending on CPU/chipset design. The default value is Enable. If your CPU does not contain internal cache, the item “CPU Internal Cache” does not appear.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

This category accelerates the Power On Self Test (POST). If Quick Power On Self Test is set to Enable, BIOS shortens or does not check certain items during the POST.

Enabled	Enable quick POST
Disabled	Normal POST

Boot From LAN First

Boot from LAN first, if enabled, directs the computer to search the LAN for a DHCP server to opbtain an IP address and then searches for a PXE server to obtain a 1.44 MB boot file. The computer then runs through its local boot process using information from the 1.44 MB boot file.

Enabled	Enable Boot from LAN First
Disabled	Disable Boot from LAN First

Boot Sequence

This category determines which drive the computer first searches for the disk operating system (e.g., DOS, Windows 3.1, Windows 95, etc.).

Note: The default value is C only.

C only	The system only searches the hard disk drive for booting instructions.
LS120 ZIP, C	The system first searches the LS120 drive then the hard disk drive for booting instructions.
A, C, SCSI	The system first searches the floppy disk drive then the hard disk drive then the SCSI Bus.
C, A, SCSI	The system first searches the hard disk drive then the floppy disk drive then the SCSI Bus.
C, CDROM, A	The system first searches the hard disk drive, then the CD-ROM drive, and then the floppy disk drive for booting instructions.
CDROM, C, A	The system first searches the CD-ROM drive, then the hard disk drive, and then the floppy disk drive for booting instructions.
D, A, SCSI	The system first searches the Drive D which is the second active DOS partition then the floppy disk drive then the SCSI Bus.
E, A, SCSI	The system first searches the Drive E which is the third active DOS partition then floppy disk drive then the SCSI Bus.
F, A, SCSI	The system first searches the Drive F which is the fourth active DOS partition then floppy disk drive then the SCSI Bus.
SCSI, A, C	The system first searches the SCSI Bus then the floppy disk drive then Drive C.
SCSI, C, A	The system first searches the SCSI Bus then Drive C then the floppy disk drive.

Swap Floppy Drive

Note: The setting is set to **Disabled** by default.

Enabled	Enable Floppy Drives A and B Swap function
Disabled	Disable Floppy Drives A and B Swap function

Boot Up Floppy Seek

During POST, BIOS determines if the floppy disk drive installed contains 40 or 80 tracks. A 360-KB floppy drive contains 40 tracks while 720-KB, 1.2-MB, and 1.44-MB contain 80 tracks.

Enabled	BIOS searches for the floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS cannot determine whether a floppy drive is 720 KB, 1.2 MB, or 1.44 MB because they are all 80 tracks.

Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that no warning message will appear if the floppy drive installed is 360 KB.

Boot Up NumLock Status

The default value is On.

On	NumLock is on
Off	NumLock is off

Gate A20 Option

This entry allows you to select how gate A20 is handled. Gate A20 is a device used to address memory above 1 MB. Initially, gate A20 was intended for support. It is more common and much faster for the chipset to provide support for A20.

Normal	Handling gate A20 by keyboard
Fast	Handling gate A20 by chipset

Memory Parity/ECC Check

This entry allows you to select how the BIOS tests memory parity and ECC (Error Correcting Code) during POST.

Note: The setting is set to **Disabled** by default.

Enabled	The BIOS runs memory test during POST.
Disabled	The BIOS skips the memory test during POST.

Typematic Rate Setting

The typematic rate setting determines the typematic rate.

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

TYPEMATIC RATE (CHARS/SEC)

When the typematic rate setting is enabled, you can select the rate at which the keys are accelerated.

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

TYPEMATIC DELAY (MSEC)

When the typematic rate setting is enabled, you can select the delay between when the key was first depressed and when the acceleration begins.

250	250 Msec
500	500 Msec
750	750 Msec
1000	1000 Msec

Security Option

The Security Option category allows you to limit access to the system and Setup, or just to Setup.

System	The system will not boot, and access to Setup will be denied if the 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 the Main Menu. You will be asked to enter the password. Simply press **Enter** here to disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

PCI/VGA Palette Snoop

PCI/VGA Palette Snoop determines whether the MPEG ISA/VESA VGA cards are compatible with PCI/VGA.

Note: The setting is set to **Disabled** by default.

Enable	When PCI/VGA works with MPEG ISA/VESA VGA card
Disable	When PCI/VGA doesn‘t work with MPEG ISA/VESA card

OS Select For DRAM > 64MB

This item allows you to access memory over 64 MB in OS2.

Note: Only select OS2 when you are using OS/2™ as the primary operating system.

Non-OS2	OS2 cannot access the memory address over 64 MB
OS2	OS2 can access the memory address over 64 MB

Video BIOS Shadow

BIOS SHADOW

BIOS Shadow determines whether system BIOS is copied to RAM or the system BIOS is always shadowed to support LBA HDD.

Enabled	System shadow is enabled
Disabled	System shadow is disabled

Video ROM Shadow

This setting determines whether video ROM is copied to RAM; however, this setting is optional based on chipset design. Video Shadow increases the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000–CBFFF Shadow
CC000–CFFFF Shadow
D0000–D3FFF Shadow
D4000–D7FF Shadow
D8000–DBFFF Shadow
DC000–DFFFF Shadow

These categories determine whether optional ROMs are copied to RAM. An example of an optional ROM is one that supports a SCSI add-on card.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

Cyrix 6x86/MII CPUID

This setting prompts the system to test for the Cyrix 6x86/MII CPU and configure settings as necessary.

Enabled	Enables Cyrix 6x86/MII CPU
Disabled	Disables Cyrix 6x86/MII CPU

Chipset Features Setup Menu

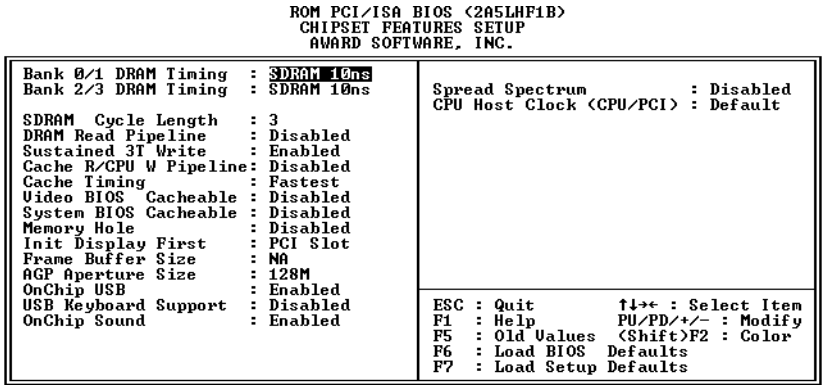


Figure 13. AWARD BIOS Chipset Features Setup Menu

Bank 0/1 DRAM Timing

These catagories allow you to configure DRAM type.

Note: Default memory setting SDRAM 10ns.

SDRAM 10ns	10ns SDRAM
SDRAM 8ns	8ns SDRAM
Normal	Normal mode RAM
Medium	Medium mode RAM
Fast	Fast mode RAM
Turbo	Turbo mode RAM

Bank 2/3 DRAM Timing

These catagories allow you to configure DRAM type.

Note: Default memory setting SDRAM 10ns.

SDRAM 10ns	10ns SDRAM
SDRAM 8ns	8ns SDRAM
Normal	Normal mode RAM
Medium	Medium mode RAM
Fast	Fast mode RAM
Turbo	Turbo mode RAM

SDRAM Cycle Length

This field sets the CAS latency timing.

2	Sets SDRAM Cycle length to 2
3	Sets SDRAM Cycle length to 3

DRAM Read Pipeline

This category allows you to enable and disable DRAM Read Pipeline.

Enable	Enables DRAM Read Pipeline.
Disable	Disables DRAM Read Pipeline

Sustained 3T Write

You may enable this field when pipelined burst synchronous SRAM (PBSRAM) cache memory is installed. It enables sustained three-cycle write access for PBSRAM access at 66 or 75 MHz.

Enable	Enable Sustained 3T Write
Disable	Disable Sustained 3T Write

Cache R/CPU W/Pipeline

This category allows you to enable or disable Cache Rd+CPU Wt Pipeline.

Enable	Enables Cache Rd+CPU Wt Pipeline
Disable	Disables Cache Rd+CPU Wt Pipeline

Cache Timing

For a secondary cache of one bank, select Faster. For a secondary cache of two banks, select Fastest.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Enable	Enable Video BIOS Caching
Disable	Disable Video BIOS Caching

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.

Enable	Enable System BIOS Caching
Disable	Disable System BIOS Caching

Memory Hole at 15Mb Addr.

Some ISA card memory must be mapped into the system memory address between 15 MB~16 MB to improve performance.

Enable	Memory address 15~16 MB is reserved for the user.
Disable	Memory address 15~16 MB is reserved for ISA cards. The system can access memory address 0~15 MB only.

INIT Display First

PCI Slot	Initializes the PCI video display before initializing any other display device on the system. The PCI display becomes the primary display.
AGP	Initializes the AGP video display before initializing any other display device on the system. The AGP display becomes the primary display.

Frame Buffer Size

Table 40:

8M	Reserves 8MB of main system memory for on-board AGP video
4M	Reserves 4MB of main system memory for on-board AGP video
NA (Init Display First set to AGP)	Reserves 2MB of main system memory for on-board AGP video
NA (Init Display First set to PCI and PCI slot is populated by secondary Video Display expansion card)	Does not reserve any main system memory for video

AGP Aperture Size

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for APG information. You can configure the size of the AGP aperture to 4, 8, 16, 32,64,128MB.

OnChip USB

Enable	Enables OnChip USB
Disable	Disables OnChip USB

This category allows you to enable or disable onboard USB ports.

OnChip Sound

Enable	Enables OnChip Sound
Disable	Disables OnChip Sound

USB Keyboard Support

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

.

Enable	Enables USB keyboard
Disable	Disables USB keyboard

Spread Spectrum

When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme values from spikes to flat curves, thus reducing EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device. We recommend you keep this setting at the **Disabled** default value.

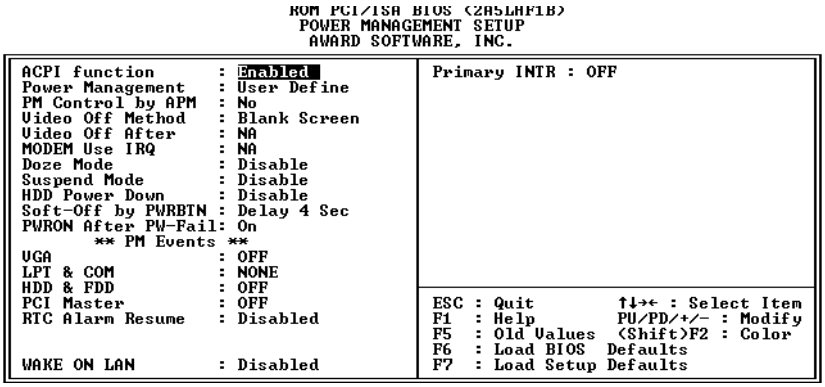
Enable	Enables Spread Spectrum
Disable	Disables Spread Spectrum

CPU Host Clock (CPU/PCI)

Default (sets to CPU)
60/30 MHz
66/33 MHz
70/35 MHz
75/25 MHz
75/37 MHz
80/20 MHz
80/40 MHz
83/27 MHz
83/41 MHz
95/31 MHz
100/33 MHz

Power Management Setup

The Power Management Setup screen appears on your screen similar to the following illustration:



ACPI Function

Advanced Configuration and Power Interface (ACPI) determines whether the operating system controls the power management and Plug and Play functions of the system. ACPI defines a flexible and extensible interface that allows system designers to select appropriate cost/feature trade-offs for power management. The interface enables new power management technology to evolve independently in operating systems and hardware while ensuring that they continue to work together. For more information on ACPI, please refer to these two Internet sites:

- http://www.teleport.com/~acpi/
- http://www.microsoft.com/hwdev/desinit/acpifaq2.htm

WHY IS ACPI IMPORTANT?

Changing from Advanced Power Management (APM) and Plug and Play (PnP) to ACPI offers many benefits including the following:

- A cooperative "Plug and Play" environment for devices and power management for desktops, notebooks, and servers
- An open Operating System Architecture that allows the development of ACPI for non-Microsoft operating systems. This O/S also lets ACPI-compliant operating systems running on non-standard hardware use the ACPI interface.
- New opportunities for product differentiation
- Developer-defined control methods using the ACPI language
- ACPI support is required for NT 5.0, Windows/PC 97& 98, Server 97& 98, and OnNow Certification. Older versions of NT do not have any power management support. ACPI-compliant systems running NT can take full advantage of power savings through ACPI power management.

Phoenix has an ACPI compliant BIOS, which the NT 5.0 and Win 98 development teams at Microsoft have been using for several months. The ACPI hardware interface provides two types of functionality to the operating system that previously resided in the BIOS:

- Control and detection of system control events using a normal interrupt called System Control Interrupt (SCI) rather than System Management Interrupt (SMI)
- Control of the system power state (http://www.phoenix.com/platform/acpi.html, 1998)

Enable	Enables ACPI
Disable	Disables ACPI

Power Management

This category determines the system power consumption level after selecting the items below. The default value is Disable. Table 41 describes each item's options.

Table 41: Power Management Options and Descriptions

Item	Options	Descriptions
Power Management	1. Disabled	Global Power Management will be disabled
	2. User Define	Users can configure their own power management
	3. Min Saving	Pre-defined timer values are used such that all timers use the MAX values
	4. Max Saving	Pre-defined timer values are used such that all timers use the MIN values
PM Control by APM	1. No	The system BIOS ignores APM when performing system power management
	2. Yes	The system BIOS waits for a prompt from APM before entering any power management mode. **Note:** If APM is installed and a task is running, even if the timer is timed out, APM does not prompt the BIOS to put the system into any power saving mode. **Note:** If APM is not installed, this option has no effect.
Video Off Method	1. Blank Screen	The system BIOS only blanks the screen when disabling video
	2. V/H SYNC + Blank	In addition to (1), the BIOS also turns off the V-SYNC & H-SYNC signals from the VGA card to the monitor
	3. DPMS Support	This function is only enabled on VGA cards that support the DPM function, which initializes the display's power saving management signaling **Note:** Green monitors detect the V/H SYNC signals and turn off the electron gun.
Video Off After	Suspend	Monitor powers down when the system enters Suspend mode
	Doze	Monitor powers down when the system enters Doze mode.
	NA	Monitor is never powered down by the BIOS.
MODEM Use IRQ	NA	A modem card is not installed
	3,4,5,7,9,10, 11	Manually input the modem card's IRQ.
Doze Mode	Disabled	System never enter doze mode (low-power saving)
	10,20,30,40 seconds	System enters doze mode after specified time.
	1,2,4,6,8,10,20, 30,40 minutes 1 hour	System enters doze mode after specified time.
Suspend Mode	Disabled	System never enters suspend.

Table 41: Power Management Options and Descriptions

	10,20,30,40 seconds	System enters supspend (high-power saving) mode after specified time.
	1,2,4,6,8,10,20, 30,40 minutes 1 hour	System enters supspend (high-power saving) mode after specified time.
HDD Power Down	1. Disable	The HDD motor will not be powered down
	2. 1~15 min.	Defines the continuous HDD idle time before the HDD enters the power saving mode (motor off) **Note:** When the HDD is in the power saving mode, the HDD is initialized upon future access.
Soft-Off by PWRBTN	1. Instant-Off	The system powers down immediately after the power button is pushed.
	2. Delay 4 Sec	The system powers down 4 seconds after the power button is pushed.
PWRON After PW-FAIL	1. Off	The system will not automatically turn on after a power failure.
	2. On	The system automatically powers up after a power failure.
VGA, LPT & COM, HDD & FDD, DMA/MASTER, MODEM RING RESUME, RTC ALARM RESUME, PRIMARY INTR	1. Off	The specified event's activity does not affect the PM timers
	2. On	The specified event's activity causes the PM Timers to be reloaded and activate the inactive device.
Wake on LAN	Disabled	System will not turn on with any network traffic.
	Enabled	System will turn on when a Magic packet is received.

PnP/PCI Configuration

You can manually configure the PCI device's IRQ settings. The following pages describe each item's options and explain the meaning of each option.

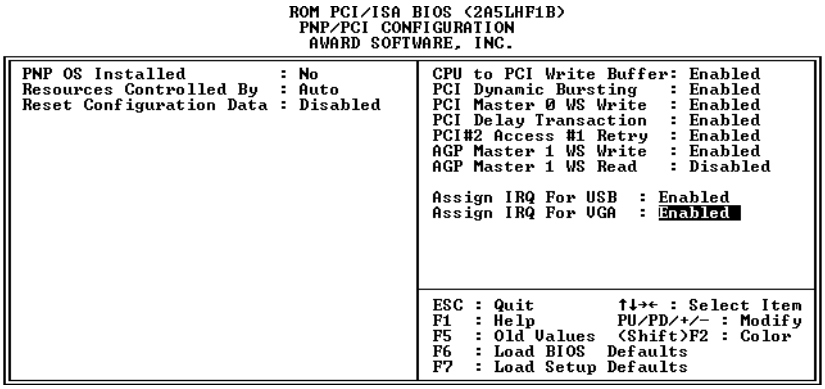


Figure 14. AWARD BIOS PCI Configuration Setup Menu

Table 42 describes each item's options and explains the meaning of each option.

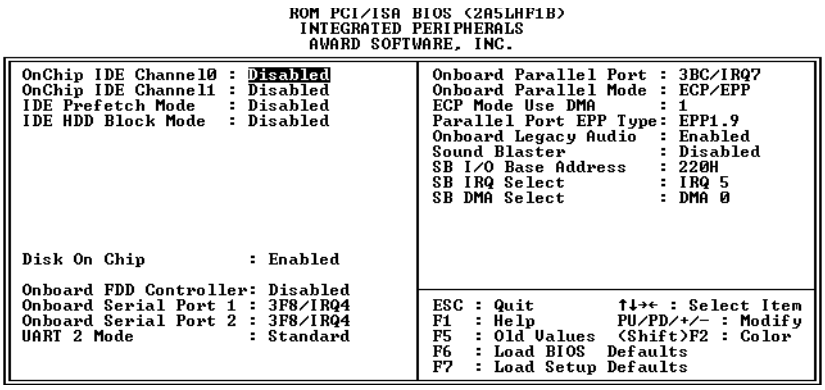
Table 42: PCI Configuration Options and Descriptions

Item	Options	Description
PNP OS Installed	Yes No	Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).
Resources Controlled By	Auto Manual	By The Plug and Play AwardBIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.
Reset Configuration Data	Enable Disable	Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.
IRQ3~15, DMA 0~7 assign to	Legacy ISA PCI/ISA PnP	Assign IRQ or DMA channel to ISA bus device only Assign IRQ or DMA channel can be resourced for PCI and ISA device
CPU to PCI Write Buffer	Enable /Disable	When Enabled, the CPU can write up to four dwords of data to the PCI write buffer before the CPU must wait for the PCI bus cycles to finish. When Disabled, the CPU must wait after each write cycle until the PCI bus signals that it is ready to receive more data.
PCI Dynamic Bursting	Enable /Disable	When Enabled, every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and non-burstable transactions do not.
PCI Master 0 WS Write	Enable /Disable	When Enabled, writes to the PCI bus are executed with zero wait states.
PCI Delay Transaction	Enable /Disable	The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.
PCI #2 Access #1 Retry	Enable /Disable	Select Enable to enable PCI #2 Access #1 Retry. Select Disable to disable PCI #2 Access #1 Retry.

Table 42: PCI Configuration Options and Descriptions

Item	Options	Description
AGP Master 1 WS Write	Enable /Disable	Select Enable to enable AGP Master 1 WS Write. Select Disable to disable AGP Master 1 WS Write.
AGP Master 1 WS Read	Enable /Disable	Select Enable to enable AGP Master 1 WS Read. Select Disable to disable AGP Master 1 WS Read.
PCI IRQ Activated By	Edge/Level	Leave the IRQ trigger set at Level unless the PCI device assigned to the interrupt specifies Edge-triggered interrupts.
Assign IRQ for USB	Enable /Disable	The BIOS assigns an IRQ for the USB port. The operating system determines USB resources.
Assign IRQ for VGA	Enable /Disable	The BIOS assigns an IRQ for Video. The operating system determines Video resources.

Integrated Peripherals



On-Chip IDE First Channel

Use this category to assign an active or non-active status to the primary motherboard IDE interface.

Enabled	Enable the onboard primary IDE channel
Disabled	Disable the onboard primary IDE channel

OnChip IDE Second Channel

Enabled	Enable on-board secondary IDE channel
Disabled	Disable on-board secondary IDE channel

IDE PreFetch Mode

The onboard IDE drive interfaces supports IDE prefetching, for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

Enabled	Enable IDE PreFetch Mode
Disabled	Disable IDE PreFetch Mode

IDE HDD Block Mode

Use this category to assign the block transfer function (the size per block is defined by your hard disk) of the primary IDE interface on the motherboard to achieve the best hard disk performance.

Enabled	Enable the block transfer function
Disabled	Disable the block transfer function

IDE Primary/Secondary Master/Slave PIO

Use these settings to assign the Programming I/O mode of the primary and secondary IDE interfaces on the mother board. The correct settings improve hard disk performance.

Auto	The system automatically detect the best type for your hard disk.
Mode 0	Assign the hard disk PIO setting to Mode 0 (Max. access time = 600 ns, Max. speed = 3.3 MB/sec.)
Mode 1	Assign the hard disk PIO setting to Mode 1 (Max. access time = 383 ns, Max. speed = 5.2 MB/sec.)
Mode 2	Assign the hard disk PIO setting to Mode 2 (Max. access time = 240 ns, Max. speed = 8.3 MB/sec.)
Mode 3	Assign the hard disk PIO setting to Mode 3 (Max. access time = 180 ns, Max. speed = 11.1 MB/sec.)
Mode 4	Assign the hard disk PIO setting to Mode 4 (Max. access time = 120 ns, Max. speed = 16.6 MB/sec.)

IDE Primary/Secondary Master/Slave UDMA

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.

Disable	Disable the IDE Primary/Secondary Master/Slave UDMA
Enable	Enable the IDE Primary/Secondary Master/Slave UDMA

Disk On Chip

Enable/Disable Disk On Chip (DOC) socket.

Enabled	Enable DOC
Disabled	Disable DOC

Onboard FDC Controller

Use this category assign the motherboard (floppy disk controller) FDC interface as active or non-active.

Enabled	Enable mother board FDC interface
Disabled	Disable mother board FDC interface

Onboard Serial Port 1/Serial Port 2

Use these categories to assign the I/O address and interrupt request channel of the RS232 ports on the mother board.

3F8/IRQ4	I/O address=3F8h, IRQ channel=4 (COM1)
2F8/IRQ3	I/O address=2F8h, IRQ channel=3 (COM2)
3E8/IRQ4	I/O address=3E8h, IRQ channel=4 (COM3)
2E8/IRQ3	I/O address=2E8h, IRQ channel=3 (COM4)
Auto	The system automatically assigns the viable I/O address and IRQ channel to your RS232 ports on the mother board.
Disable	Disables the RS232 function of the mother board.

UART 2 Operation Mode

Use these categories to assign the operation mode of the RS232 ports on the mother board.

Standard	RS232 will work in FIFO standard mode
HPSIR	RS232 will work in Half Phase Serial Infrared mode
ASKIR	RS232 will work in Amplitude Shift Keyed Infrared mode

UART 2/IR Duplex Mode

Use these categories to assign the duplex mode of the serial IR ports on the mother board.

Half	Serial IR port will work in half duplex mode
Full	Serial IR port will work in full duplex mode
IR-RX TX	2-pin One transmit One receive
IR-RX2TX2	4-pin Two transmit Two receive

Onboard Parallel Port

Use this category to assign the I/O address and interrupt request channel for the parallel port on the mother board.

378/IRQ7	I/O address = 378h, IRQ channel = 7
278/IRQ5	I/O address = 278h, IRQ channel = 5
3BC/IRQ7	I/O address = 3BCh, IRQ channel = 7
Disable	Disable the parallel function on the mother board

Parallel Port Mode

Use this category to assign the working mode of the parallel port on the mother board.

Normal	Parallel port will work in SPP (standard parallel port) mode
EPP	Parallel port will work in EPP (enhanced parallel port) mode
ECP	Parallel port will work in ECP (extended capabilities port) mode
ECP+EPP	Parallel port will auto-detect the parallel device for working in EPP or ECP mode

ECP Mode Use DMA

Use this category to assign the DMA (direct memory access) channel for the ECP device used.

3	DMA 3 is used by the ECP device
1	DMA 1 is used by the ECP device

Parallel Port EPP Type

Use this category to assign the IEEE standard version for the EPP device used.

Note: Please refer to your printer documentation when selecting EPP type.

EPP1.9	Version 1.9 (new version)
EPP1.7	Version 1.7 (old version)

Setting the Password

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

```
ENTER PASSWORD:
```

Type the password, up to eight characters, and press **Enter**. The password typed clears any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press **Enter**. You may also press **Esc** to abort the selection and not enter a password.

To disable the password, press **Enter** when you are prompted to enter password. A message confirms the password being disabled. Once the password is disabled, the system boots and you can enter Setup freely.

```
PASSWORD DISABLED.
```

If you select **System** from the BIOS Features Setup Menu Security option, you are prompted for the password each time the system is rebooted or each time you try to enter Setup. If you select **Setup** from the BIOS Features Setup Menu Security option, you are prompted for the password only when entering Setup.

The system allows you to modify each item when you use the supervisor password to enter the CMOS setup screen.

The system only allows you to modify the user password setting when you use your user password to enter the CMOS setup screen.

IDE HDD Auto Detection

The Enhanced IDE feature is provided in all AWARD BIOS. Below is a brief description of this feature.

1. Setup Changes

AUTO-DETECTION

BIOS setup displays all modes supported by the HDD, including:

- Normal
- LBA
- Large

If the HDD does not support the LBA mode, no LBA option is shown. If the number of cylinders is less than or equal to 1024, no Large option is shown.

Select the appropriate mode. An illustration of the AWARD CMOS setup utility is provided below for your convenience.

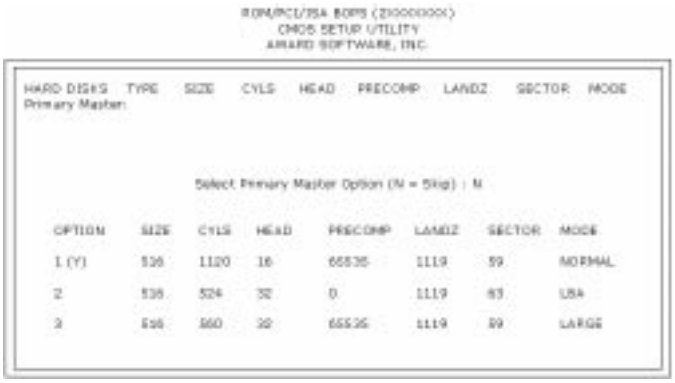


Figure 15. AWARD BOPS CMOS Setup Utility

STANDARD CMOS SETUP

		CYLS	HEADS	PRECOMP	LAND ZONE	SECTOR	MODE
Drive C:	User (516 MB)	1120	16	65535	1119	59	Normal
Drive D:	None (203 MB)	684	16	65535	685	38	--------

When the HDD type is User, the Mode field becomes available to select the HDD mode.

2. HDD Modes

The AWARD BIOS supports the following three HDD modes:

- Normal
- LBA
- Large

NORMAL MODE

General access mode -the maximum number of cylinders, head & sectors for NORMAL mode are 1024, 16 and 63.

X	No Cylinder	(1024)
X	No. Head	(16)
X	No. Sector	(63)
	No. per Sector	(512)

528 Megabytes

If the HDD is set to Normal mode, the maximum accessible HDD size is 528 MB Megabytes, even though its physical capacity may be larger.

LBA (LOGICAL BLOCK ADDRESSING) MODE

LAB represents a new HDD access method to overcome the 528-MB bottleneck. The number of cylinders, heads, and sectors that appear in setup may not be the number physically contained in the HDD.

During HDD access, the IDE controller transforms the logical address described by the sector, head, and cylinder number into its own physical address inside the HDD.

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

X	No Cylinder	(1024)
X	No. Head	(255)
X	No. Sector	(63)
	No. per Sector	(512)

8.4 Gigabytes

LARGE MODE

AWARD Software supports extended HDD access mode.
Some IDE HDDs contain more than 1024 cylinders, and users may not want to select LBA mode. AWARD BIOS provides an alternative to support these HDDs.

Large Mode Example

Cylinders	Heads	Sectors	Mode
1120	16	59	Normal
560	32	59	Large

BIOS tells the operating system that the number of cylinders is less than 1024 divided by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process occurs inside INT13h to access the right HDD address.

Maximum HDD Size

X	No Cylinder	(1024)
X	No. Head	(32)
X	No. Sector	(63)
	No. per Sector	(512)

1.0 Gigabyte

3. Remarks

To support either the HDD LBA or Large mode, some modes must be software involved. This software is located in the AWARD HDD Service Routine (INT 13h). It may be impossible to access HDD in LBA (Large) mode if your operating system or a running application program replaces the entire INT 13h.

Hard Disk Low Level Format Utility

The AWARD Low-Level-Format utility is a tool designed to save time formatting your hard disk. The utility automatically checks the selected drive's necessary information. The utility also searches for bad tracks and lists them for your reference.

Control Keys

Use the Up and Down arrow keys to select from the items displayed on the upper portion of the screen. Press **Enter** to accept the selection. Press **Esc** to abort the selection or exit the utility.

Select Drive

Select from installed hard disk drive C or D. The drive(s) the utility automatically detects is listed at the bottom of the screen.

Bad Track List

AUTO SCAN BAD TRACK

This utility automatically scans bad tracks and lists the bad tracks in the window on the right-hand side of the screen.

ADD BAD TRACK

Type bad track information in the window on the right-hand side of the screen.

MODIFY BAD TRACK

Modify user-input bad track information in the window on the right-hand side of the screen.

DELETE BAD TRACK

Delete user-input bad track information in the window on the right-hand side of the screen.

CLEAR BAD TRACK TABLE

Clear the entire bad track list in the window on the right- hand side of the screen.

Preformat

INTERLEAVE

Select the interleave number of the hard disk drive on which you want to perform a low-level format. Select from 1 to 8. Check the accompanying hard disk documentation for the correct interleave number, or select 0 for automatic detection by the utility.

AUTO SCAN BAD TRACK

This feature allows the utility to scan first, then format by each track.

START

Press **Y** to start the low-level format.

Power-On Boot

If, after you have made changes to the CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it off then on. You may also restart by simultaneously pressing **Ctrl**, **Alt**, and **Del**. While the system is restarting, immediately press **Insert** to load the default CMOS BIOS value for boot up.

BIOS Reference–POST Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen. The message `PRESS F1 TO CONTINUE OR DEL TO ENTER SETUP` will be shown in the information box at the bottom.

POST Beep

There are two types of beep codes in the AWARD BIOS. One code indicates a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other code indicates a DRAM error has occurred. This beep code consists of a single, long, repeated beep.

Error Messages

One or more of the following error messages may be displayed if the BIOS detects an error during the POST. The following list contains error messages for all AWARD BIOS:

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional and should be replaced.

CMOS CHECKSUM ERROR

The CMOS checksum is incorrect. This can indicate the CMOS has become corrupt. Or, this error can be caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

FLOPPY DISK(S) fail (80)

Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)

Floppy Type does not match.

HARD DISK(S) fail (80)

HDD reset failed.

HARD DISK(S) fail (40)

HDD controller diagnostics failed.

HARD DISK(S) fail (20)

HDD initialization error.

HARD DISK(S) fail (10)

Unable to recalibrate fixed disk.

HARD DISK(S) fail (08)

Sector verify failed.

Keyboard is locked out–Unlock the key

BIOS detected the keyboard is locked. P17 of the keyboard controller is pulled low.

Keyboard error or no keyboard present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop

The system will repeat the POST procedure infinitely while the P15 of the keyboard controller is pulled low. This is also used for M/B burn in test.

BIOS ROM checksum error–System halted

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail

BIOS reports the memory test failed if errors occurred during the onboard memory test.

Appendix B—DiskOnChip 2000 Flash ROM Disk

XL 1.0 Motherboard Flash ROM Disk with DiskOnChip 2000

The DiskOnChip 2000 is a single-chip Flash Disk designed to plug into a standard 32-pin Flash EPROM socket. The DiskOnChip 2000 should be mapped to an 8-Kb window in the system BIOS expansion address space, which is usually located in address 0C8000H to 0E0000H.

The DiskOnChip 2000 contains a built-in copy of the M-Systems industry-standard TrueFFS software, which allows the DiskOnChip to operate as a standard disk drive. The DiskOnChip 2000 can also contain the operating system, allowing BOOT capability in systems without a hard disk. See “Configuring the DiskOnChip 2000 as the First Drive” on page 66 for more information.

The DiskOnChip is a self-contained device. The installation of the DiskOnChip does not require any software installation. The design of the DiskOnChip allows for full upward and downward compatibility. While available today in capacities of 8 to 288 MB, future DiskOnChip devices with higher densities will be fully compatible with standard DiskOnChip sockets. The basic design of the DiskOnChip actually supports an unlimited capacity.

Operating the DiskOnChip

Installing the DiskOnChip 2000

Caution: Always unplug the NetXpress Thin Client from the power supply before conducting any internal work.

When installing or removing the DiskOnChip, be sure to first touch a grounded surface to discharge any static electricity from your body.

To install the DiskOnChip:

1. Align pin 1 on the DiskOnChip with pin 1 of socket.
2. Push the DiskOnChip into the socket carefully until it is fully seated.

   Note: Ensure the DiskOnChip is installed securely and there are no bent pins.

Caution: The DiskOnChip may be permanently damaged if installed incorrectly.

INSTALLING THE DOC AS A HARD DISK

To install the DiskOnChip as drive C on a system without a hard disk:

1. Set the drive C CMOS setup of to “not installed” (no physical magnetic disk is installed), and reboot the computer.

   The DiskOnChip 2000 installs as drive C. The DiskOnChip must be formatted with the System files in order for it to BOOT. See “Configuring the DiskOnChip 2000 as the BOOT Device” on page 65 for more information.

   Note: If a hard drive is installed in the system, the DiskOnChip either does not operate or is identified as the primary hard drive. The DOC must be enabled under *Integrated Peripherals* in the BIOS.

   To install the DiskOnChip as drive D on a system with a hard disk, simply reboot the system and the DiskOnChip will be installed as drive D.

   To install the DiskOnChip as Drive C on a system with a hard disk, see “Configuring the DiskOnChip 2000 as the First Drive” on page 66.

Configuring the DiskOnChip 2000 as the BOOT Device

To configure the DiskOnChip as the BOOT device, the operating system files must be copied into the DiskOnChip. Copying the operating system files into the DiskOnChip is performed like in any other hard disk. The following steps describe a typical initialization process:

1. Set up the DiskOnChip as a regular drive in your system (not a BOOT drive).
2. Install a bootable floppy diskette in drive A and BOOT the system.
3. At the DOS prompt, type `SYS C:` to transfer the DOS system files to the DiskOnChip (assuming the DiskOnChip is installed as drive C).
4. Copy all necessary files into the DiskOnChip.
5. Remove the floppy diskette and reboot the system. The system will BOOT from the DiskOnChip, and will allow you to run and access any files that have been copied into the DiskOnChip.

Note: The hard drive must be set on the 2nd IDE controller.

Configuring the DiskOnChip 2000 as the First Drive

The DiskOnChip can be configured to be installed as the last drive (default) or as the first drive in the system.

If the DiskOnChip 2000 is installed as the last drive and ...	then...
there is another hard drive installed	DiskOnChip is installed as Drive D.
no other hard disk is installed,	DiskOnChip is installed as Drive C.

When configured as the first drive, the DiskOnChip is always installed as drive C.

The DiskOnChip is shipped from the factory configured to be installed as the last drive. To configure the DiskOnChip to be installed as the first drive, use the steps below:

1. BOOT the system and make sure the DiskOnChip is installed correctly as drive D.
2. At the DOS prompt type: DUPDATE D:/FIRST /S:DOC105.EXB.
3. After re-booting the system, the DiskOnChip appears as C:.

XL 1.0 Motherboard Flash Disk Software Utilities

DFORMAT

Before TrueFFS can access a flash media, the media must be formatted, just as a floppy disk must be formatted before use. Formatting initializes the media and writes a new and empty DOS file system to the media. When formatting is complete, the media contains only a root directory.

The Flash Disk is fully tested and formatted before the product is shipped, but it can be formatted more than once. Each time it is formatted, all data on the media is destroyed. When reformatting, the boot-image is retained by default. The DFORMAT syntax is:

Usage: DFORMAT {drive-letter/WIN:segment} [/SIZE:size] [/USE:nnn] [/LABEL:label] [/DOSVER:n] [/SPARE:n] [/Y]
The DFORMAT options are:

driver-letter	DOS driver letter of the TrueFFS drive.
/WIN:Segment	Memory address in which the DiskOnChip is located. Use either this flag or the **driver-letter** flag.
/SIZE:size	The size of the flash media to be formatted (including the install partition). By default the entire media is formatted by DFORMAT. This option limits the formatted size.
/USE:nnn	Percentage of available space on the flash media to be used for file storage. **nnn** can be any number from 1 to 100. Default is 99 (99%). The value of this option may affect the write performance of TrueFFS.
/DOSVER:dos-major-version	Format for a target system running the specified DOS version. The default is the current DOS version (the one on which DFORMAT is executed). For example, /DOSVER:3 formats for DOS 3.X. Valid values are 1 to 6.
/SPARE:n	Number of spare units. Default is 1. A value 0 selects a WORM (Write Once Read Many).
/Y	Do not pause for confirmation before beginning to format.

Example 1: DFORMAT C:
Formats the Flash Disk used as Drive C.

Example 2: DFORMAT /WIN:D000
Formats the Flash Disk located at memory address hex D000. If any other hard disk is present in the system, the Flash Disk is identified as drive D:

CONFIGURING THE DISKONCHIP AS A BOOTABLE DISK

The Flash Disk fully supports the BOOT capability. For the Flash Disk to be bootable, it should be DOS formatted as bootable, like any floppy or hard disk required to be bootable.

Example 1: SYS D:
Changes the disk into a bootable medium, assuming the Flash Disk is disk D:.

DUPDATE—Updating DiskOnChip 2000 Firmware

In case a firmware update is required, M-Systems will deliver a new .EXB file, which should be written into the firmware portion of the Flash media within the Flash Disk, Use the DUPDATE utility to write the .EXB file into the Flash media firmware portion.
DUPDATE requires the DiskOnChip be preprogrammed with the previous firmware file, which is the default as the Flash Disk is shipped fully tested and programmed.
The DUPDATE syntax is:

DUPDATE [drive-letter/WIN:Segment] /S:BootImage /FIRST

driver-letter	TrueFFS drive DOS driver letter.
/WIN:Segment	Memory address in which the DiskOnChip is located. Use either this parameter or the drive letter. The segment should be specified in Hex (e.g. /win:d000).
/S:BootImage	The boot image file of the new firmware to be written to the Flash Disk. Usually the file type is .EXB.
/FIRST	Use this flag to program the DiskOnChip to be the first disk if more disks are installed in the system. This flag has no effect if the DiskOnChip is the only disk in the system. The /S parameter must be supplied when /FIRST flag is used.

Example 1: DUPDATE C:/S:DOC105.EXB
Program the firmware, which is supplied in DOC105.EXB file, into the DiskOnChip located as drive C:.

Example 2: DUPDATE /WIN:D000 /S:DOC105.EXB
Program the firmware, which is supplied in DOC105.EXB file, into the DiskOnChip located at memory address hex D000. The DiskOnChip will be the last drive in the system (e.g., D: if one magnetic hard drive is already configured).

Example 3: DUPDATE /WIN:D000 /S:DOC105.EXB /FIRST
Program the firmware, which is supplied in DOC105.EXB file, into the DiskOnChip located at memory address hex D000. The DiskOnChip will be the first drive (C:) if a hard disk is available in the system.

DINFO

The DINFO Information utility provides background information regarding the DiskOnChip 2000 and the environment in which it operates. DINFO reports include:

- TrueFFS drive letters
- Installed software and its version compliance.
- The size of the Flash media.

The DINFO syntax is: DINFO

Example: DINFO
Searches the system for DiskOnChip.

Appendix C—Fast Ethernet PCI Bus Controller

XL 1.0 Motherboard RealTek 8139BF Fast Ethernet Controller Features

The XL 1.0 Motherboard RealTek 8139BF Fast Ethernet Controller offers the following capabilities:

- Provides IEEE 802.3x 10 base-T and 100 base-TX compatibility
- Contains internal 3-KB transmit and 3-KB receive FIFOs
- Allows fast back-to-back transmit at 100 Mbps within minimum Interframe Spacing (IFS)
- Allows full or half duplex support at 10 or 100 Mbps
- Supports IEEE 802.3 flow control
- Packet Driver and Complete drivers for Novell, ODI, NDIS, Windows 95, Windows 98, Windows NT, and OS/2

Software Diskette

Setup

The setup.exe program helps load the necessary software drivers. It also automatically configures and provides diagnostics for these cards. You can easily configure the LAN chip using this program.

Works Cited

Phoenix Technologies, Ltd. (1998) *ACPI,* http://www.phoenix.com/platform/acpi.html, Phoenix Techonlogies,411 E. Plumeria Dr., San Jose, CA 95134, USA

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