Hunter hyperCache Plus

Motherboard
Installation Guide

MN-PHHPL-01

Contents

Introduction III

Chapter 1 - Pre-Configuration 1

Chapter 2 - HIFLEX BIOS Setup 18
Standard Setup 20
Advanced Setup 20
Advanced Setup 25
Power Management Setup 25
PCI/PnP Setup 27
Peripheral Setup 31
Changing Supervisor Password 32
Save Settings and Exit 33
Exit without Saving 33

Chapter 3 - Upgrading 34
Upgrading the System Memory 34
Upgrading the Microprocessor 34

Appendix A - Technical Specifications 35

Appendix B - Industrial Devices 54

Appendix C - Flash BIOS 62

Appendix D - Disk-On-Chip 64

Appendix E - Active Backplane 66

Introduction

Thank you for your purchase of the Hunter hyperCache Plus™ industrial system motherboard. The Hunter hyperCache Plus™ design was based on the Cypress hyperCache™ chipset providing the ideal platform to industrial applications.

The Hunter hyperCache Plus™ is based on the Intel Pentium™ processor. Also this industrial system board incorporates two major innovations the on-board watchdog timer, a CPU monitoring device and the on-board Post display codes for diagnostics and custom applications.

With proper installation and maintenance, your Hunter hyperCache Plus™ will provide years of high performance and trouble free operation.

This manual provides a detailed explanation into the installation and use of the Hunter hyperCache Plus™ industrial system board. This manual is written for the novice PC user/installer. However, as with any major computer component installation, previous experience is helpful and should you not have prior experience, it would be prudent to have someone assist you in the installation. This manual is broken down into 3 chapters and 5 appendix.

Chapter 1 - Pre-Configuration

This chapter provides all the necessary information for installing the Hunter hyperCache Plus™. Topics discussed include: installing the CPU (if necessary), DRAM installation, jumper settings for CPU, cache and standard I/O. Connecting all the cables from the system board to the chassis and peripherals.

Chapter 2 - BIOS Configuration

This chapter shows the final step in getting your system firmware setup.

Chapter 3 - Upgrading

The Hunter hyperCache Plus provides a number of expansion options including memory and CPU. All aspects of the upgrade

Appendix A - Technical Specifications

A complete listing of all the major technical specifications of the Hunter hyperCache Plus is provided.

Appendix B - On Board Industrial devices

Watchdog Timer and On-Board Post (Power On Self Testing) Display

Appendix C - Flash BIOS Programming

Provides all the information necessary to program your optional AMIBIOS Flash BIOS.

Appendix D - Disk-on-Chip

On-board socket for a solid state flash disk device.

Appendix E - Active Backplane Connector

The Hunter hyperCache Plus exclusive connector for slots expandability.

Warranty

This product is warranted against material and manufacturing defects for two years from the date of delivery. Buyer agrees that if this product proves defective the manufacturer is only obligated to repair, replace or refund the purchase price of this product under manufacturer's discretion. The warranty is void if the product has been subjected to alteration, neglete, misuse or abuse; if any repairs have been attempted by anyone other than the manufacturer; or if failure is caused by accident, acts of god, or other causes beyond the manufacturer's control.

Static Electricity Warning!

The Hunter hyperCache Plus has been designed as rugged as possible but can still be damaged if jarred sharply or struck. Handle the motherboard with care. The Hunter hyperCache Plus also contains delicate electronic circuits that can be damaged or weakened by static electricity. Before

removing the Hunter hyperCache Plus from its protective packaging, it is strongly recommended that you use a grounding wrist strap. The grounding strap will safely discharge any static electricity build up in your body and will avoid damaging the motherboard. Do not walk across a carpet or linoleum floor with the bare board in hand.

Hunter hyperCache Plus - An Overview

The Hunter hyperCache Plus represents the ultimate in industrial system board technology. No other system board available today provides such impressive list of features:

CPU Support

- Supports full series of Intel Pentium™ processors up to 233MHz.
- On-board voltage regulator for P55C (MMX).
- Supports AMD™ K6, K6/2 and K6/2E.

Supported Bus Clocks

50, 60 and 66 MHz.

Memory

32 or 36-bit JEDEC standard FPM or EDO SIMMS - 70ns minimum access speed. Memory capacity: 8 to 256MB.

High Speed DRAM Cache

Integrated 256KB pipeline burst SRAM direct-mapped L2 cache

On-Board I/O

- 2 Floppies up to 2.88 MB.
- Two high speed RS-232 serial ports 16Bytes FIFO (16550).
- One Centronics™ compatible bidirectional parallel port. EPP/ECP mode compatible.
- PS/2 mouse port.
- Auxiliary keyboard connector.
- Universal Serial Bus header.

On-Board Industrial Devices

- Watchdog Timer.
- POST code display.

On-Board Flash Disk

On-board flash disk socket for up to 144MB disk-on-Chip with FFS (Flash File System)

ROM BIOS

AMI HIFLEX BIOS with optional FLASH ROM

Conventions Used in this Manual

! *Notes - Such as a brief discussion of memory types.*

1 *Important Information - such as static warnings, or very important instructions.*

7 *When instructed to enter keyboard keystrokes, the text will be noted by this graphic.*

Chapter 1 Pre-Configuration

This chapter provides all the necessary information for installing the Hunter hyperCache Plus into a standard or industrial PC chassis. Topics discussed include: installing the CPU (if necessary), DRAM installation, jumper settings for CPU and standard I/O.

Handling Precautions

The Hunter hyperCache Plus has been designed to be as rugged as possible but it can be damaged if dropped, jarred sharply or struck. Damage may also occur by using excessive force in performing certain installation procedures such as forcing the system board into the chassis or placing too much torque on a mounting screw.

Take special care when installing or removing the system memory SIMMs. Never force a SIMM into a socket. Screwdrivers slipping off a screw and scraping the board can break a trace or component leads, rendering the board unusable. Always handle the Hunter hyperCache Plus with care.

!

Special Warranty Note:

Products returned for warranty repair will be inspected for damage caused by improper installation and misuse as described in the previous section and the static warning below. Should the board show signs of abuse, the warranty will become void and the customer will be billed for all repairs and shipping and handling costs.

Static Warning

The Hunter hyperCache Plus contains delicate electronic semiconductors that are highly sensitive to static electricity. These components, if subjected to a static electricity discharge, can be weakened thereby reducing the serviceable life of the system board. BEFORE THE BOARD IS REMOVED FROM ITS PROTECTIVE ANTISTATIC PACKAGING, TAKE PROPER PRECAUTIONS! Work on a conductive surface that is connected to the ground. Before touching any electronic device, ground yourself by touching an unpainted metal object or, and highly recommended, use a grounding strap.

Step 1 Setting the Jumpers

Your Hunter hyperCache plus is equipped with a large number of peripherals and has the ability to run at a variety of speeds without the need to change any crystals or oscillators. As such, there is a large number of configuration jumpers on the board. Taken step by step, setting these jumpers is easy. We suggest you review each section and follow the instructions.

Jumper Types

Jumpers are small copper pins attached to the system board. Covering two pins with a shunt closes the connection between them. The Hunter hyperCache Plus examines these jumpers to determine specific configuration information. There are three different categories of jumpers on the Hunter hyperCache Plus.

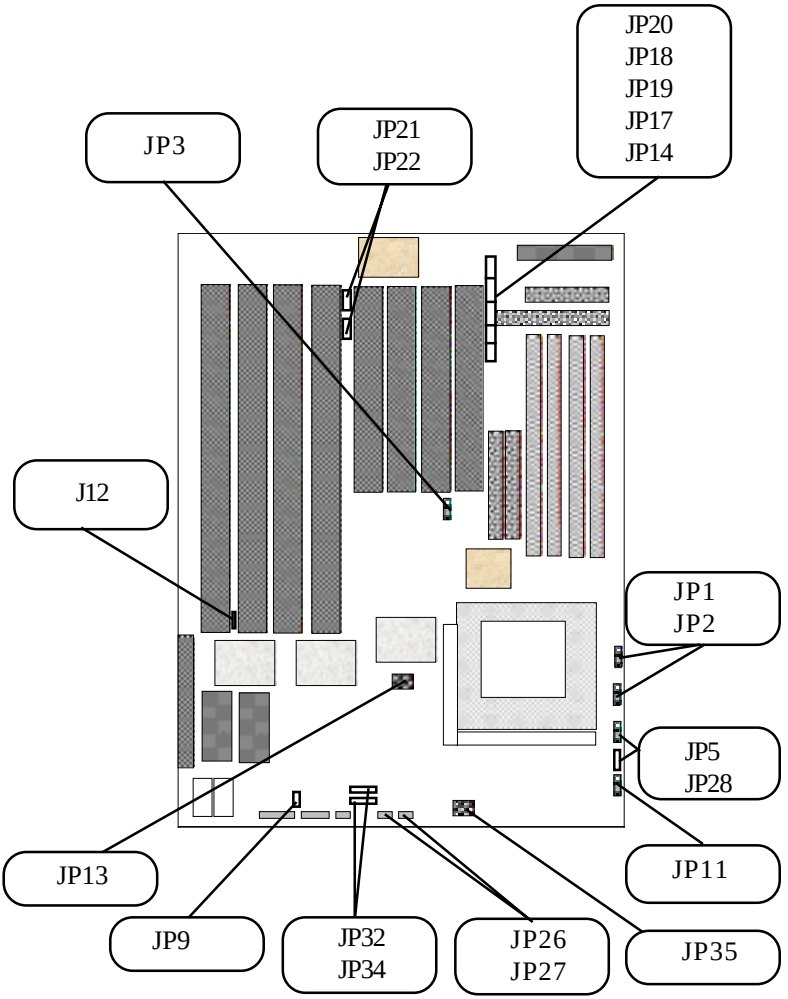
A. Two pin jumpers are used for binary selections such as enable, disable. Instructions for this type of jumper are open, for no shunt over the pins or closed, when the shunt covers the pins.

B. Three or four pin jumpers are used for multiple selection. Instructions for these jumpers will indicate which two pins to cover. For example: for JP*x* 2-3 the shunt will be covering pins 2 and 3 leaving pins 1 and 4 exposed.

C. Grouped jumpers are used when a certain function has multiple selections. There are two grouped jumpers on the board and careful attention should be given when setting these jumpers. Instructions for grouped jumpers are similar to those above.

Jumper Locations

Use the diagram below and the tables on the following pages to locate and set the on-board configuration jumpers.



Standard I/O Enable

The Hunter hyperCache Plus standard I/O consists of the two serial ports, the parallel port and floppy disk controller. Jumper JP20 is used to enable or disable these ports.

Table 1-1 Standard I/O Enable

I/O	Enabled	Disabled
JP20	1-2*	2-3

CMOS Reset

This option is provided as a convenience for those who need to reset the CMOS registers. It should always be set to "Normal" for standard operation. If the CMOS needs to be reset, turn off the system, move JP9 to 2-3, turn the system on.

Table 1-2 CMOS Reset

RTC	Normal	Reset
JP9	1-2*	2-3

BIOS Size

The Hunter hyperCache Plus BIOS size is determined by JP5. For 256KB move JP5 to 1-2 position. The standard default is 128KB, position 2-3.

Table 1-3 BIOS Size

BIOS	256K	128K
JP5	1-2	2-3*

I/O Port IRQ Selection

The parallel port and both serial ports must have their IRQs. Normally, these settings can be left in their default settings and only when conflicts arise should they be changed. Jumper JP17 is used to select the parallel port IRQ. Jumper JP19 is used to select the first serial port's IRQ. Jumper JP18 is used to select the second serial port's IRQ. Use Table 1-4 to select the IRQs for these options.

Table 1-4 I/O Port IRQ Selection

Port	Jumper	1-2	2-3	3-4
Parallel Port	JP17	IRQ 7*	IRQ 5	Disable
First Serial Port	JP19	IRQ 4*	IRQ 5	Disable
Second Serial Port	JP18	IRQ 3*	IRQ 9	Disable

Table 1-5 DMA Configuration for EPP Parallel Port

Port	Jumper	1-2	2-3
ECP DMA	JP21	DREQ 3*	Disabled
	JP22	DACK 3*	Disabled

Clock Speed Selection

The jumpers JP13 allow you to choose the appropriate CPU speed, without changing crystals and oscillators.

Table 1-6 Clock Frequency

Clock Frequency	JP13
50MHz	1-2
60MHz	3-4
66MHz	5-6

VIO & VCore Voltage Selection

The Hunter hyperCache Plus has a built in voltage regulator. Make your selection by JP11 for VIO selection and by J35 for VCore selection.

Table 1-7 Voltage Regulator Selection

VIO	3.38V	3.52V
JP11	1-2*	2-3

Table 1-8 VCore Voltage Selection

JP35	1-2	3-4	5-6	7-8
2.2V	OFF	ON	OFF	OFF
2.8V	OFF	OFF	OFF	ON
2.9V	ON	OFF	OFF	ON
3.2V	OFF	OFF	ON	ON
3.5V	ON	ON	ON	ON

Table 1-9 Clock Speed Selection

	JP2	JP1	JP28	JP13
Intel	**BF0 1-2**	**BF1 3-4**	**BF2 5-6**	**BUS Clock**
100MHz	Off	Off	x	5-6
133MHz	On	Off	x	5-6
166MHz	On	On	x	5-6
200MHz*	Off	On	x	5-6
233MHz*	Off	Off	x	5-6
AMDK6				
K6/2E 233MHz	Off	Off	x	5-6
K6/2E 266MHz	On	Off	On	5-6
K6/2E 300MHz	On	On	On	5-6
K6/2E 333MHz	Off	On	On	5-6
K6/2E 366MHz	Off	Off	On	5-6
K6/2E 400MHz	On	Off	Off	5-6

! *Please Check your CPU markings for proper voltage selection.*

Table 1-10 CPU Voltage Selection

	JP10 - VCORE				
Intel	**1-2**	**3-4**	**5-6**	**7-8**	**VOLT.**
100MHz	On	On	On	On	3.52V
133MHz	On	On	On	On	3.52V
166MHz	On	On	On	On	3.52V
200MHz*	On	On	On	On	3.52V
233MHz*	Off	Off	Off	On	2.8V
AMDK6					
K6/2E 233MHZ	Off	On	Off	Off	2.2V
K6/2E 266MHZ	Off	On	Off	Off	2.2V
K6/2 300MHZ	Off	On	Off	Off	2.2V
K6/2 333MHZ	Off	On	Off	Off	2.2V
K6/2 366MHZ	Off	On	Off	Off	2.2V
K6/2 400MHZ	Off	On	Off	Off	2.2V

Table 1-10a VCore Voltage Selection

JP35	**1-2**	**3-4**	**5-6**	**7-8**
2.2V	OFF	ON	OFF	OFF
2.8V	OFF	OFF	OFF	ON
2.9V	ON	OFF	OFF	ON
3.2V	OFF	OFF	ON	ON
3.5V	ON	ON	ON	ON

Flash BIOS Programming Voltage

To program the optional flash BIOS use JP12 to select the voltage according to the flash BIOS chip manufacturer. For regular standard BIOS use default settings.

Table 1-11 Voltage Programming Selection

Flash BIOS Voltage Programing	12V	5V
JP12	1-2*	2-3

Watchdog Timer Selection

The watchdog timer can be set as hardware, software or disabled through JP27 and JP26 sets the time-out. Please refer to appendix B if you need more details.

Table 1-12 Watchdog Timer Selection

Watchdog Selection	Hardware	Disabled	Software
JP27	1-2	3-4*	5-6

Table 1-13 Watchdog Time-out Selection

Watchdog Timeout	1200ms	600ms	150ms
JP26	1-2*	2-3	3-4

Table 1-14 Watchdog Address Selection

Address	JP32	JP34
100	2-3	2-3
110	1-2	2-3
300	2-3	1-2
310	1-2*	1-2*

Step 2 DRAM, CPU and Cables Installation

Depending upon how your Hunter hyperCache Plus is configured you may need to install the following:

- DRAM (SIMMs)
- CPU

Hunter hyperCache Plus Memory Configuration

The Hunter hyperCache Plus uses standard or EDO 60ns access speed or faster SIMMs. It is very important that the quality of the SIMMs is good. Undesirable operation of the system may result if poor quality SIMMs are used. Always purchase your memory from a reliable source.

!

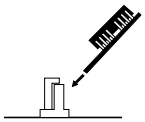
The Hunter hyperCache Plus uses standard 32 or 36-Bit SIMMs. They are slight larger than other 9-Bit SIMMs that are also commonly used on systems boards. Thus, a total of 32 Bits (no parity) or 36 Bits (with parity) are stored. This is often confusing because these SIMMs are commonly referred to as 1MB by 32 or 36 or 4MB by 32 or 36. To determine the actual capacity of the SIMM, simply multiply the 1MB or 4MB by 4. Thus the actual SIMMS capacity is 4MB and 16MB respectively.

Installing SIMMs

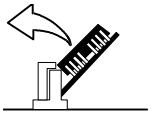
When inserting the memory modules, note the notch on the edge of each module. This notch is designed to permit insertion in only one way. This notch must be pointed towards the keyboard connector.

Start with the innermost socket (SM1). Gently place the module into the desired socket at a 30°-45° angle. Then gently rotate or rock the module into an upright position. **Never force a memory module into its socket.** Rather, double check the notch and gently rock it into place. When the module has been properly installed, the metal latches on either side of the memory module will "click" into place (See figure 1-2). Repeat the mentioned steps until all memory modules are installed. No jumpers are involved in DRAM configuration. Use JEDEC standard finger thickness.

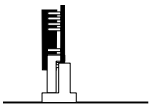
Figure 1-2 SIMM Insertion



Gently place the SIMM into the desired socket at 30°-45° angle.



Then gently rotate or rock the SIMM into an upright position. **Never force a SIMM into its socket.**

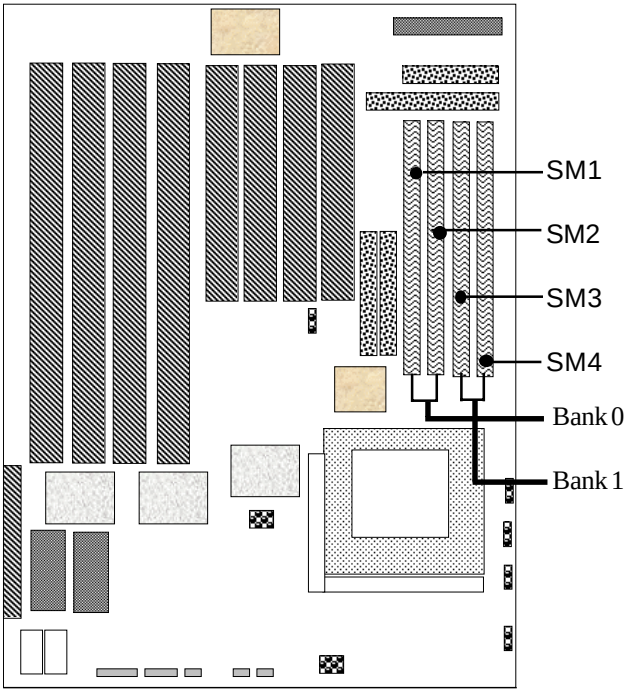


Double check the notch and gently rock it into place if properly installed the SIMM will "click".

1

At least TWO memory modules MUST be installed at a time. Same size, design and manufacturer recommended.

Figure 1-3 Memory Modules Socket Locations



CPU Installation

The Hunter hyperCache Plus currently supports the following CPUs:

- Full series of Intel Pentium™ processors up to 233MHz MMX.
- On-board voltage regulator for P55C (MMX).
- Supports AMD™ K6, K6/2 and K6/2E.

1

1. Improper installation of the CPU may cause permanent damage to both the system board and the CPU. -- Void of warranty

2. Always handle the CPU by the edges, never touch the pins.

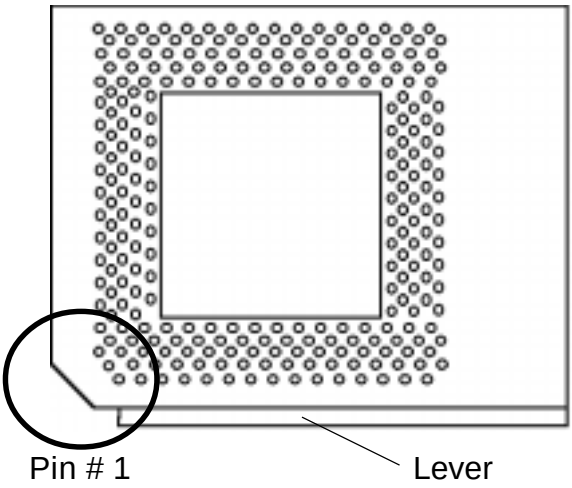
3. Always use a heatsink and CPU fan.

Using Figure 1-4, locate the diagonal notch on the CPU chip. This notch represents pin one. The Pentium processor also has a small dot as well indicating pin 1. **DO NOT USE THE CHIP LOGO OR LETTERING TO LOCATE PIN ONE**.
Locate the CPU socket on your Hunter hyperCache Plus system board. Pin 1 on the socket is located in the lower left hand corner of the socket.

Figure 1-4 CPU Alignment

To install the processor, lift the lever of the ZIF socket and gently insert the CPU. Make sure the CPU is inserted all the way. Lower the lever. See figure 1-5.

Figure 1-5 CPU Socket alignment

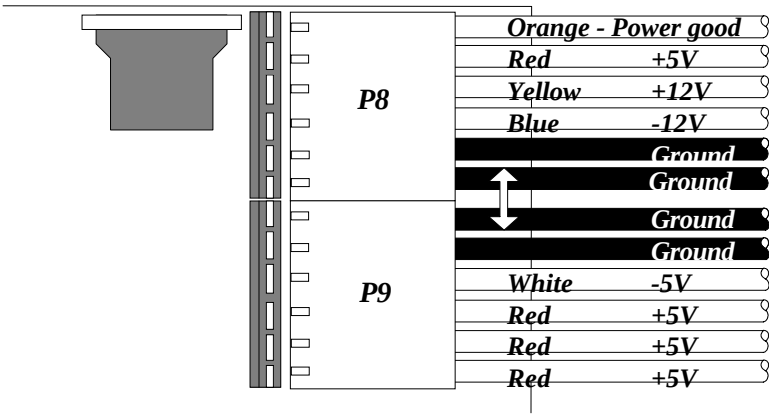


This completes the installation of the CPU. Now it is a good time to double check both the CPU and SIMM installation to make sure that these devices have been properly installed.

Installing Cables

Power and Control Panel Cables

Figure 1-6 Power and Control Panel Cables



Connect the power supply cables to the system board. There is no formal convention for color coding the wires on power supplies except for ground wires which are black. Use figure above to determine the proper cable locations.

Next install the control panel cables for each of the control panel headers. These headers are located along the bottom of the board. Again, there is no standard convention for color coding these cables. However, the connectors for “Key lock/Power LED” and “Speaker” are keyed. While the actual connector on the cable harness may not be keyed, there will probably be a wire missing.

Figure 1-7 On-Board Connectors Location

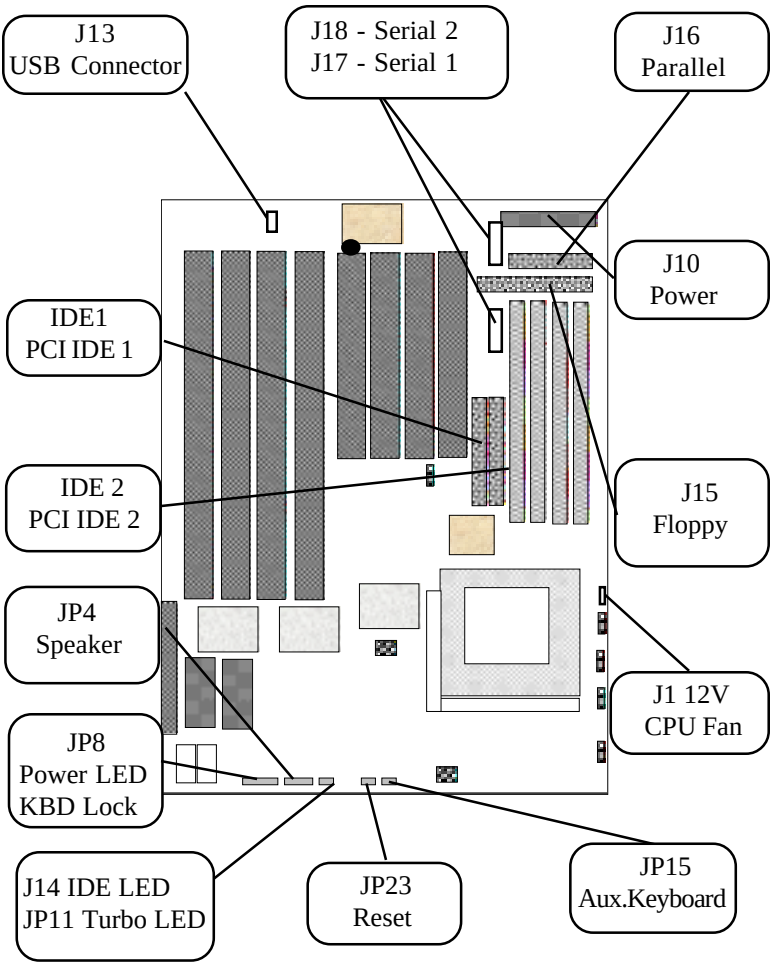


Table 1-15 Control Panel Connectors

Connector	Description
J13	PS/2 mouse
J12	Keyboard
J15	Floppy
J18	Serial 2
J17	Serial 1
J16	Parallel
JP23	Reset
JP4	Speaker 1-SPK/2-key/3-GND/4-VCC
J11	Turbo LED
JP14	IDE LED 1-positive/2-signal
JP8	Power LED / KBD. Lock 1-LED/2-key/3-GND/4&5Klock
J1	CPU Fan 1&3-GND/2-12V
J10	AT Power
IDE 1	Primary PCI IDE
IDE 2	Secondary PCI IDE
J13	USB
JP15	Auxiliary Keyboard

Installing Peripheral Cables

Begin with the top of the Hunter hyperCache Plus system working left to right. Refer to Figure 1-1 for the locations of each of the peripheral connectors.

Now it is a good time to install the internal peripherals such as floppy and hard disk drives. Do not connect the power cable to these peripherals as it is easier to attach the bulky ribbon cables before the smaller power connectors. If you are installing more than one IDE drive, double check your master/slave jumpers on the drives. Review the information supplied with your drive for more information on this subject.

Connect the floppy cable (not included) to the system board. Then connect remaining ends of the ribbon cable to the appropriate peripherals.

Finally, connect the IDE cable (not included) to the system. Then connect remaining ends of the ribbon cable to the appropriate peripherals. This concludes the hardware installation of your Hunter hyperCache Plus system. Now it is a good time to re-check all of the cable connections to make sure they are correct. It is also a good idea to label each of the external peripheral connectors - COM1, COM2, Mouse and Parallel.

Chapter 2 HIFLEX BIOS Setup

Your Hunter hyperCache Plus features AMI BIOS . The system configuration parameters are set via the AMIBIOS setup. Since HIFLEX BIOS Setup resides in the ROM BIOS, it is available each time the computer is turned on.

Starting WinBIOS Setup

As POST executes, the following appears:

Hit <DEL> if you want to run SETUP

Using the Keyboard with WinBIOS Setup

WinBIOS Setup has a built-in keyboard driver that uses simple keystroke combinations:

Keystroke	Function
<Tab>	Move to the next window or field.
,,,	Move to the next field to the right, left, above, or below.
<Enter>	Select in the current field.
+	Increments a value.
-	Decrements a value.
<Esc>	Closes the current operation and return to previous level.
<PgUp>	Returns to the previous page.
<PgDn>	Advances to the next page.
<Home>	Returns to the beginning of the text.
<End>	Advances to the end of the text.
<Alt> <H>	Access a help window.
<Alt> <Spacebar>	Exit WINBIOS Setup.
Alphabetic keys	A to Z are used in the Virtual Keyboard, and are not case-sensitive.
Numeric keys	0 to 9 are used in the Virtual Keyboard and Numeric Keypad.

BIOS Setup Main Menu

The BIOS Setup main menu is organized into 11 windows.. Each window is discussed in this chapter.

Each window contains several options. Clicking on each option activates a specific function. The BIOS Setup options and functions are described in this chapter. Some options may not be

available in your BIOS. The windows are:

- Standard CMOS Setup
- Advanced CMOS Setup
- Advanced Chipset Setup
- Power Management Setup
- PCI/Plug and Play Setup
- Peripheral Setup
- Auto-Detect Hard Drive
- Change Supervisor Password
- Auto Configuration With Optimal Settings
- Auto Configuration With Fail Safe Settings
- Save Settings and Exit
- Exit Without Saving

Standard Setup

Standard Setup options are displayed by choosing the standard option from the HIFLEXBIOS Setup menu. All Standard Setup options are described below.

Date/Time

Select the Date/Time option to change the date or time. The current date and time are displayed. Enter new values through the displayed window.

Floppy Drive A, B

Choose the Floppy Drive A or B icon to specify the floppy drive type. The settings are *360 KB 5¼", 1.2 MB 5¼", 720 KB 3½", 1.44 MB 3½",* or *2.88 MB 3½".*

Pri Master Pri Slave

Sec Master Sec Slave

Select one of these options to configure the hard disk drive. Select Auto from the drive parameters screen to let AMIBIOS automatically configure the drive. A screen with a list of drive parameters appears. Choose the desired option to configure the drive.

BOOT Sector Virus Protection

This option when enabled scan for virus everytime the system initializes. The options are Enabled or Disabled.

Advanced Setup

Advanced Setup options are displayed by choosing the Advanced option from the AMIBIOS Setup main menu. All Advanced Setup options are described in this section.

Quick Boot

Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. This option replaces the old

Above 1 MB Memory Test Advanced Setup option. The settings are: enabled and disabled.

Pri Master ARMD Emulated as

Pri Slave ARMD Emulated as

Sec Master ARMD Emulated as

Sec Slave ARMD Emulated as

If set to Auto, the default emulation depends on ARMD drive. The default emulation type is floppy for LS120, hard drive for MO, hard disk for zip drives.

1st Boot Device

This option sets the type of device for the first boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are Disabled, IDE0, 1st IDE, 2nd IDE, 3rd IDE, 4th IDE, Floppy, ARMD-FDD, ARMD-HDD, ATAPI-CDROM, SCSI, Network, LS120. The Optimal and Fail-Safe default settings are IDE-0.

2nd, 3rd Boot Device

This option selects additional devices to boot from. The settings are Disable, drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are Disabled, IDE0, 1st IDE, 2nd IDE, 3rd IDE-HDD, 4th IDE-HDD, Floppy, ARMD-FDD, ARMD-HDD, ATAPI-CDROM, SCSI. The Optimal and Fail-Safe default settings are Floppy.

4th Boot Device

This option selects additional devices to boot from. The settings are Disable, drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are Disabled, IDE0, 1st IDE, 2nd IDE, 3rd IDE-HDD, 4th IDE-HDD, Floppy, ARMD-FDD, ARMD-HDD, ATAPI-CDROM. The Optimal and Fail-Safe default settings are Floppy.

Try Other Boot Devices

Set this option to Yes to instruct AMIBIOS to attempt to boot from any other drive in the system if it cannot find a boot drive

among the drives specified in the 1st Boot Device, 2nd Boot Device, 3rd Boot Device, and 4th Boot Device options.

Floppy Acess Control

This option specifies the read/write access that is set when booting from a floppy drive. The settings are Read/Write or Read-Only. The Optimal and Fail-Safe default settings are Read/Write.

Hard Disk Acess Control

This option specifies the read/write access that is set when booting from a hard disk drive. The settings are Read/Write or Read-Only. The Optimal and Fail-Safe default settings are Read/Write.

S.M.A.R.T. for Hard Disks

Set this option to Enabled to permit AMIBIOS to use the SMART (System Management System Management and Reporting Technologies) protocol for reporting server system information over a network. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

BootUp Num Lock

Set this option to *Off* to turn the Num Lock key off when the computer is booted so you can use the arrow keys on both the numeric keypad and the keyboard. The settings are *On* or *Off*. The default settings are *On.*

Floppy Drive Swap

Set this option to *Enabled* to permit drives A: and B: to be swapped. The settings are *Enabled* or *Disabled.* The default settings are *Disabled.*

Floppy Drive Seek

Set this option to *Enabled* to specify that floppy drive A: will perform a Seek operation at system boot. The settings are *Disabled* or *Enabled*. The optimal and fail-safe default settings are *Disabled*.

PS/2 Mouse Support

Set this option to Enabled to enable AMIBIOS support for a PS/2-type mouse.

System Keyboard

This option does not specify if a keyboard is attached to the computer. Rather, it specifies if error messages are displayed if a keyboard is not attached. This option permits you to configure workstations with no keyboards. The settings are Absent or Present. The Optimal and Fail-Safe default settings are Present

Primary Display

This option configures the type of monitor attached to the computer. The settings are Mono, CGA40x25, CGA80x25, VGA/EGA, or Absent. The Optimal and Fail-Safe default settings are VGA/EGA.

Password Check

This option enables password checking every time the system boots or when you run AMIBIOS Setup. If Always is chosen, a user password prompt appears every time the computer is turned on. If Setup is chosen, the password prompt appears if AMIBIOS is executed. See the Advanced Setup chapter for instructions on changing a password. The Optimal and Fail-Safe defaults are Setup.

BOOT To OS/2

Set this option to Enabled if running OS/2 operating system and using more than 64 MB of system memory on the motherboard. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Wait for <F1> If Error

AMIBIOS POST runs system diagnostic tests that can generate a message followed by:

Press <F1> to continue

If this option is set to Enabled, AMIBIOS waits for the end user to press <F1> before continuing. If this option is set to disabled, AMIBIOS continues the boot process without waiting for <F1>

to be pressed. The settings are enabled or disabled. The default settings are Enabled.

Internal Cache

This option enables or disables the L1 internal Cache.

External Cache

This option enables or disables the L2 secondary (external) cache memory.

System BIOS Cacheable

When set to Enabled, the contents of the F0000h system memory segment can be read from or written to cache memory. The contents of this memory segment is always copied from the BIOS ROM to system RAM for faster execution. The settings are Enabled or Disabled.

C000,16K Shadow

C400,16K Shadow

These options specify how the 32 KB of video ROM at C0000h is treated. The settings are: enabled, disabled or cached.

C800,16K Shadow

CC00,16K Shadow

D000,16K Shadow

D400,16K Shadow

D800, 16K Shadow

DC00,16K Shadow

These options enable shadowing of the contents of the ROM area named in the option. The ROM area not used by ISA adapter cards is allocated to PCI adapter cards. The settings are: Disabled, cached or enabled.

Advanced Setup

USB Function

Set this option to Enabled to enable USB (Universal Serial Bus) support. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Enabled.

CPU to DRAM Buffer

The settings are On and Off. The Optimal and Fail-Safe default settings is On.

CPU to PCI Buffer

Allows to use an USB keyboard or mouse before loading any software.

Address to Speed Up

The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Disabled.

Power Management Setup

These options are currently not available

Power Management/APM

Set this option to *Enabled* to enable the power management and APM (Advanced Power Management) features. AMIBIOS uses the RTC Alarm function to wake the computer at a prespecified time. The settings are *Enabled* or *Disabled* or *Instant On.* The default settings are *Disabled*.

Inst-On Support

Set this option to Enabled to enable AMIBIOS support for the Intel™ InstantON specification. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Green PC Monitor Power State

This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power saving state after the specified period of display inactivity has expired. The settings are Off, Standby, Suspend, or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Video Power Down Mode

This option specifies the power management state that the video subsystem enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Standby*, or *Suspend.* The default settings are *Disabled.*

Hard Disk Power Down Mode

This option specifies the power management state that the hard disk drive enters after the specified period of display inactivity has expired. The settings are *Disabled, Standby*, or *Suspend.* The default settings are *Disabled.*

Hard Disk Timeout (Minute)

This option specifies the length of a period of hard disk inactivity. When this period expires, the hard disk drive enters the power-conserving mode specified in the **Hard Disk Power Down Mode** option described on the previous page. The settings are *Disabled, 1 Min (minutes),* and all one minute intervals up to and including 15 *Min*. The default settings are *Disabled.*

Standby Time out (Minute)

This option specifies the length of the period of system inactivity when the computer is in Full-On mode before the computer is placed in Standby mode. In Standby mode, some power use is curtailed. The settings are *Disabled, 1 Min, 2 Min,* and all one minute intervals up to and including 15 *Min*. The default settings are *Disabled*. IRQ 10 - Ignore

Suspend Time out (Minute)

This option specifies the length of the period of system inactivity when the computer is already in Standby mode before the computer is placed in Suspend mode. In Suspend mode, nearly all power use is curtailed

Display Activity

When set to Monitor, this option enables event monitoring on the video display. If set to Monitor and the computer is in a power saving state, AMIBIOS watches for display activity. The computer enters the Full On state if any activity occurs. AMIBIOS reloads the Standby and Suspend timeout timers if display activity occurs. The settings are Monitor or Ignore. The Optimal and Fail-Safe default settings are Ignore.

IRQ 3

IRQ 4

IRQ 5

IRQ 7

IRQ 9

IRQ 10

IRQ 11

IRQ 12

IRQ 13

IRQ 14

IRQ 15

PCI/PnP Setup

PCI/PnP Setup options are displayed by choosing the PCI/PnP Setup option from the BIOS Setup main menu. All PCI/PnP Setup options are described in this section

Plug and Play Aware OS

Set this option to *Yes* if the operating system installed in the computer is Plug and Play-aware. AMIBIOS only detects and enables PnP ISA adapter cards that are required for system boot. The Windows 95 operating system detects and enables all other

PnP-aware adapter cards. Windows 95 is PnP-aware. Set this option to *No* if the operating system (such as DOS, OS/2, Windows 3.x) does not use PnP. *You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly.* The settings are *No* or *Yes.* The Optimal and Fail-Safe default settings are *No.*

PCI Latency Timer (in PCI Clocks)

This option sets latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks. The settings are *32*, *64*, *96*, *128*, *160*, *192*, *224*, or *248.* The Optimal and Fail-Safe default efault settings are *64.*

PCI VGA Palette Snoop

This option must be set to *Enabled* if any ISA adapter card installed in the computer requires VGA palette snooping. The settings are *Disabled* or *Enabled.* The Optimal and Fail-Safe default settings are *Disabled.*

PCI IDE Bus Master

Set this option to *Enabled* to specify that the IDE controller on the PCI local bus has bus mastering capability. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled.*

Offboard PCI IDE Card

This option specifies if an offboard PCI IDE controller adapter card is used in the computer. You must also specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller card is installed. If an offboard PCI IDE controller is used, the onboard IDE controller on the motherboard is automatically disabled. The settings are *Erase*, *Auto*, *Slot1*, *Slot2*, *Slot3*, or *Slot4.*

If *Auto* is selected, AMIBIOS automatically determines the correct setting for this option. The Optimal and Fail-Safe default settings are *Auto.*

PCI Slot1 IRQ Priority

PCI Slot2 IRQ Priority

PCI Slot3 IRQ Priority

PCI Slot4 IRQ Priority

These options specify the IRQ priority for PCI devices installed in the PCI expansion slots. The settings are Auto, (IRQ) 3,4,5,7,9,10, 11, 12, 14 and 15, in priority order. The Optimal and Fail-Safe default settings are auto.

DMA Channel 0

DMA Channel 1

DMA Channel 2

DMA Channel 3

DMA Channel 4

DMA Channel 5

DMA Channel 6

DMA Channel 7

These options allow you to specify the bus type used by each DMA channel. The settings are PNP or ISA/EISA. The optimal and fail-safe default settings are PNP.

IRQ3

IRQ4

IRQ5

IRQ7

IRQ9

IRQ10

IRQ11

IRQ12

IRQ14

IRQ15

These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards. These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured as PCI/PNP. IRQ12 only apperas if the mouse support option in advanced setup is set to disabled. The optimal and fail-safe default settings are PCI/PNP.

Reserved Memory Size

This option specifies the size of the memory area reserved for legacy ISA adapter cards.
The settings are *Disabled, 16K, 32K,* or *64K.* The Optimal and Fail-Safe default settings are *Disabled.*

Reserved Memory Address

This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards.
The settings are *C0000, C4000, C8000, CC000, D0000, D4000, D8000,* or *DC000*. The Optimal and Fail-Safe default settings are *C0000.*

Peripheral Setup

Peripheral Setup options are displayed by choosing Peripheral Setup from the AMIBIOS Setup main menu. All Peripheral Setup options are described here.

Onboard FDC

Set this option to Enabled to enable the floppy drive controller on the motherboard. The settings are Auto (AMIBIOS automatically determines if the floppy controller should be enabled), Enabled, or Disabled. The Optimal and Fail-Safe default settings are Enabled.

Onboard Serial Port1

This option specifies the base I/O port address of serial port 1. The settings are Auto (AMIBIOS automatically determines the correct base I/O port address), Disabled, 3F8h, 2F8h, 2E8h, or 3E8h. The Optimal and Fail-Safe default settings are Auto.

Onboard Serial Port2

This option specifies the base I/O port address of serial port 2. The settings are Auto (AMIBIOS automatically determines the correct base I/O port address), Disabled, 3F8h, 2F8h, 2E8h, or 3E8h. The Optimal and Fail-Safe default settings are Auto.

Onboard Parallel Port

This option specifies the base I/O port address of the parallel port on the motherboard. The settings are Disabled, 378h, 278h, or 3BCh. The Optimal default setting is 378h. The Fail-Safe default setting is Disabled.

Parallel Port Mode

This option specifies the parallel port mode. The Optimal default setting is Normal. The Fail-Safe default setting is Disabled. The settings are: normal, bedirectional, ECP or EPP.

Parallel Port IRQ

This option specifies the IRQ used by the parallel port. The settings are Auto, (IRQ) 5, or (IRQ) 7. The Optimal and Fail-Safe default settings are Auto.

Onboard PCI IDE

This option specifies the IDE channel used by the onboard IDE controller. The settings are Disabled, Primary, or Secondary. The Optimal and Fail-Safe default settings are Primary.

Auto Detect Hard Disk

Choose this option to let AMIBIOS find the IDE hard disk drive parameters for all IDE drives connected to the primary and secondary IDE channels installed in the system.
AMIBIOS automatically configures the drive parameters after it has detected these parameters.

Changing Supervisor Password

Select the Supervisor *or* User *from the Security section of the AMIBIOS Setup main menu. Enter the password and press <Enter>. The screen does not display the characters entered. After the new password is entered, retype the new password as prompted and press <Enter>.*

&

Remember the Password *Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in CMOS.*

Auto Configuration with Optimal Settings

You can load the optimal default settings for the AMIBIOS by selecting the Optimal icon. The Optimal default settings are best-case values that should optimize system performance. If CMOS is corrupted, the Optimal settings are loaded automatically.

Auto Configuration with Fail-Safe Settings

You can load the Fail-Safe AMIBIOS Setup option settings by selecting the Fail-Safe icon from the Default section of the AMIBIOS Setup main menu.
The Fail-Safe settings provide far from optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system is behaving erratically.

Save Settings and Exit

Exit AMIBIOS saving the changes.

Exit without Saving

Allows to exit AMIBIOS setup without saving.

Chapter 3: Upgrading

Upgrading the System Memory

The Hunter hyperCache Plus allows an upgrade of the system memory up to 256MB, using SIMMs memory modules. It can be configured with FPM, EDO or SDRAM modules. It is very important that the quality of the SIMMs is good. Undesirable operation of the system may result if poor quality SIMMs are used. Always purchase your memory from a reliable source.

Upgrading the Microprocessor

The Hunter hyperCache Plus currently supports the following CPUs:

- Supports full series of Intel Pentium™ processors up to 233MHz.
- Supports AMD™ K6, K6/2 and K6/2E

There are three jumpers related to the microprocessor. For correct installation and proper function please refer to the table on the next page.

Using Figure 3-1, locate the diagonal notch on the CPU chip. This notch represents pin one. The Pentium processor also has a small dot as well indicating pin 1. **DO NOT USE THE CHIP LOGO OR LETTERING TO LOCATE PIN ONE**.
Locate the CPU socket on your Hunter hyperCache Plus system board. Pin 1 on the socket is located in the lower left hand corner of the socket.

Figure 3-1 CPU Alignment

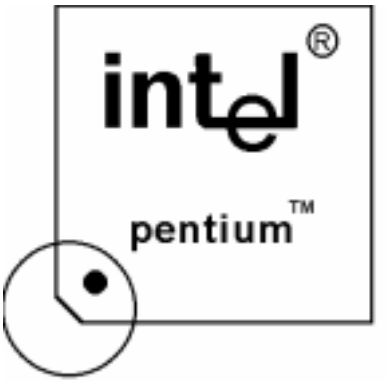


Table 3-1 Clock Frequency and CPU speed Selection

	JP2	JP1	JP28	JP13
Intel	**BF0 1-2**	**BF1 3-4**	**BF2 5-6**	**BUS Clock**
100MHz	Off	Off	x	5-6
133MHz	On	Off	x	5-6
166MHz	On	On	x	5-6
200MHz*	Off	On	x	5-6
233MHz*	Off	Off	x	5-6
AMDK6				
K6/2E 233MHz	Off	Off	x	5-6
K6/2E 266MHz	On	Off	On	5-6
K6/2E 300MHz	On	On	On	5-6
K6/2E 333MHz	Off	On	On	5-6
K6/2E 366MHz	Off	Off	On	5-6
K6/2E 400MHz	On	Off	Off	5-6

**** MMX CPUs***

JP35	1-2	3-4	5-6	7-8
2.2V	OFF	ON	OFF	OFF
2.8V	OFF	OFF	OFF	ON
2.9V	ON	OFF	OFF	ON
3.2V	OFF	OFF	ON	ON
3.5V	ON	ON	ON	ON

Appendix A Technical Specifications

Chipsets

Core Logic

Cypress hyperCache CY 82C69x chipset.

Peripheral I/O

Chips & Technologies C&T 82C735.

System Memory

Memory Capacity

4 to 256MB of FPM, EDO or DRAM memory.

Memory Type

Four sockets for JEDEC standard compatible (72 pin) 32 bit SIMMs, 60ns access speed or faster. All memory configurations are set automatic through BIOS.

System BIOS

AMI HIFLEX BIOS

On-board Flash Disk

On board single flash disk device in a standard 32-pin DIP socket up to 144MB with Flash File System (FFS).

Flash BIOS

Optional feature for System BIOS. Flash programming done through floppy drive.

Embedded I/O

IDE

Two PCI EIDE controllers. Supports up to 4 devices.
Ultra DMA up to 33MB/sec. supported. CD ROM and LS120 compatible 34 pin header on-board.

Floppy

Up to two floppy disk drives. Sizes supported are: 5.25" 360K and 1.2MB; 3.5" 720K, 1.44MB and 2.88MB. Floppy Tape.

Serial Ports

Two high speed 16550 compatible UARTS.
BIOS configurable as COM1 - 4.

USB Interfaces

One USB header on-board.

Parallel Port

One Centronics compatible, bi-directional (PS/2 compatible). Microsoft/HP EPC/EPP high speed.

Mouse Port

One PS/2 compatible mouse controller with 6 pin mini-din connector.

Expansion Slots

Four 16 bit ISA slots and four PCI slots (one shared).

Disk-On-Chip - Solid State Flash Disk

On-board Flash disk socket supporting up to 144MB with Flash File System included.

Miscellaneous

CMOS/Battery

RTC with lithium battery. No external battery is required.

Control Panel Connections

Reset, Keylock, Speaker, CPU fan (12V). LEDs for power and IDE.

CPU Socket

Standard ZIF (Zero Insertion Force), socket 7.

Form Factor

Baby-AT Size - 8.6" x 13".

PCB Construction

Six Layer, dry film mask.

Manufacturing Process

Automated surface mount.

Reliability

MTBF: 48.840 hours

Environmental	Operating	Non-Operating
Temperature	0º to +55º C	-40º to +65º C
Humidity	5 to 95% @ 40º C non-condensing	5 to 95% @ 40º C non-condensing
Shock	2.5G @ 10ms	10G 10ms
Vibration	0.25 @ 5-100Hz	5G @ 5-100Hz

Table A-1 Standard PC-AT I/O Map

Address (HEX)	Device
000-01F	DMA Controller
020-03F	Interrupt Controller 1
040-05F	Timer
070-07F	Real Time Clock (non-maskable interrupt)
080-09F	DMA Page Registers
0A0-0BF	Interrupt Controller 2
0C0-0DF	DMA Controller 2
0F8-0FF	Math co-processor
1F0-1FF	Hard Disk Controller
200-207	Game I/O
278-27F	Prototype Card
2F8-2FF	Serial Port 2
300-31F	Parallel Printer Port
380-38F	SDLC Bi-synchronous 2
3B0-3AF	Bi-synchronous 1

Table A-2 DMA Page Register and I/O address

Channel	Function
Page Register	**I/O Hex Address**
Channel 0	87
Channel 1	83
Channel 2	81
Channel 3	82
Controller 2: 16-bit (at Only - ports 0C0-0DF)	
Channel 5	8B
Channel 6	89
Channel 7	8A
Refresh (AT)	8F

Table A-3 DMA Assignments

Channel	Function
0	Reserved
1	SDLC
2	Floppy Disk
3	Spare
4	Cascade for CTRL
5	Spare (Reserved)
6	Spare (Reserved)
7	Spare (Reserved)

Table A-4 DMA Controller Register

DMA #		Description
1	**2**	
0	0C0	CH0 base and current address
1	0C2	CH0 base and current word count
2	0C4	CH0 base and current address
3	0C6	CH0 base and current word count
4	0C8	CH0 base and current address
5	0CA	CH0 base and current word count
6	0CC	CH0 base and current address
7	0CE	CH0 base and current word count
8	0D0	Read status register/write command register
9	0D2	Write request register
00A	0D4	Write single mask request register bit
00B	0D6	Write mode register
00C	0D8	Clear byte pointer Flip/Flop
00D	0DA	Read temporary register / Write master clear

Table A-5 Interrupts

Channel	Name	Function
NMI	NMI	Parity
0	IRQ0	System Timer Output 0*
1	KYBIRQ	Keyboard Output Buffer Full
2	IRQ2	CTRL2 Interrupt (IRQ8-IRQ15)
3	IRQ3	Serial Port 2 (COM2)
4	IRQ4	Serial Port 1 (COM1)
5	IRQ5	Parallel Port 2
6	IRQ6	Floppy Disk Controller
7	IRQ7	Parallel Port 1
8	RTCIRQ	Real Time Clock
9	IRQ9	Available
10	IRQ10	Available
11	IRQ11	Available
12	IRQ12	PS/2 Mouse
13	IRQ13	Math Coprocessor

Connectors Pin Outs

Table A-6 Serial Connectors

Pin#	Name
1	-DCD
2	-DSR
3	RXD
4	-RTS
5	TXD
6	-CTS
7	-DTR
8	-RI
9	GND
10	N/C

Table A-7 Floppy Disk Drive Connector

Pin#	Name
2	DRVDEN0
4	N/C
6	MTR0
8	-INDEX
10	-MTRO
12	DS1
14	DS0
16	-MTR1
18	DIR
20	-STEP
22	-WDATA
24	-WGATE
26	-TRK0
28	WRTPRT
30	-RDATA

Table A-8 Parallel DB25 Connector

Pin#	Name
1	-STROBE
2	AUTOFD
3	PD0
4	ERROR
5	PD1
6	INIT
7	PD2
8	SLCTIN
9	PD3
10	GND
11	PD4
12	GND
13	PD5
14	GND
15	PD6
16	GND
17	PD7
19	ACK
21	BUSY

Table A-9 IDE Connector

Pin#	Name	Pin#	Name
1	-RST	21	IDRQ0
2	GND	22	GND
3	D7	23	IOW
4	D8	24	GND
5	D6	25	IOR
6	D9	26	GND
7	D5	27	ICRDY
8	D10	28	N/C
9	D4	29	ACK
10	D11	30	GND
11	D3	31	IDEINT
12	D12	32	IO16
13	D2	33	SA1
14	D13	34	N/C
15	D1	35	SA0

Table A-10 PS/2 Mouse Connector

Pin#	Name
1	CLOCK
2	N/C
3	N/C
4	N/C
5	N/C
6	5V
7	N/C
8	DATA
9	GND
10	N/C

Table A-10a USB Headers

	USB1	USB2
1	VCC	VCC
2	-D	-D
3	+D	+D
4	GND	GND

Table A-11 Serial Port Cable Wire List

Pin#	Signal	Pin#	9 Pin
1	-DCD	8	1
2	-DSR	6	6
3	RXD	3	2
4	-RTS	4	7
5	TXD	2	3
6	-CTS	5	8
7	-DTR	20	4
8	-RI	22	9
9	GND	7	5
10	N/C	N/C	N/C

Table A-13 PCI Connector Pin Assignments

Pin#	Assign.	Pin#	Assign.	Pin#	Assign	Pin#	Assign.
A01	N/C	A32	AD16	B01	-12V	B32	AD17
A02	+12V	A33	+3.3V	B02	TCK	B33	C/BE2#
A03	N/C	A34	FRAME#	B03	GND	B34	GND
A04	WRAP	A35	GND	B04	TDO	B35	IRDY#
A05	+5V	A36	TRDY#	B05	+5V	B36	+3.3V
A06	INTA#	A37	GND	B06	+5V	B37	DEVSEL
A07	INTC#	A38	STOP#	B07	INTB#	B38	GND
A08	+5V	A39	+3.3V	B08	INTD#	B39	LOCK#
A09	N/C	A40	SDONE	B09	ID1	B40	PERR#
A10	+5V	A41	SB0#	B10	ID2	B41	+3.3V
A11	CLCKD	A42	GND	B11	GNT3#	B42	SERR#
A12	GND	A43	PAR	B12	GND	B43	3.3V
A13	GND	A44	AD15	B13	GND	B44	C/BE1#
A14	N/C	A45	+3.3V	B14	N/C	B45	AD14
A15	RST#	A46	AD13	B15	GND	B46	GND
A16	+5V (I/O)	A47	AD11	B16	CLKB	B47	AD12
A17	GNT0#	A48	GND	B17	GND	B48	AD10
A18	GND	A49	AD09	B18	REQ0#	B49	GND
A19	N/C	A50	KEY	B19	+5V(I/O)	B50	KEY
A20	AD30	A51	KEY	B20	AD31	B51	KEY
A21	N/C	A52	C/BE0#	B21	AD29	B52	AD08

Pin#	Assign.	Pin#	Assign.	Pin#	Assign	Pin#	Assign.
A25	NAD24	A58	AD00	B27	AD23	B58	AD01
A26	IDESEL	A59	+5V	B28	GND	B59	+5v(I/0)
A27	N/C	A60	REQ64#	B29	AD21	B60	ACK64#
A28	AD22	A61	+5V	B30	AD19	B61	+5V
A29	AD20	A62	+5V	B31	+3.3V	B62	+5V
A30	GND						
A31	AD18						

Table A-14 ISA Connector Pin Assignments

Pin#	Assign.	Pin#	Assign.	Pin#	Assign	Pin#	Assign.
A01	IOCH	B01	D18	C01	SBHE#	D01	EMCS1
A02	SD7	B02	RESETD	C02	LA23	D02	IOCS16
A03	SD6	B03	D16	C03	LA22	D03	IRQ10
A04	SD5	B04	IRQ9	C04	LA21	D04	IRQ11
A05	SD4	B05	+5V	C05	LA20	D05	IRQ12
A06	SD3	B06	DRQ2	C06	LA19	D06	IRQ15
A07	SD2	B07	-12V	C07	LA18	D07	IRQ14
A08	SD1	B08	0WS#	C08	LA17	D08	DACK0
A09	SD0	B09	+12V	C09	MEMR	D09	DRQ0
A10	IOCHR	B10	D18	C10	MEMW#	D10	DACK5
A11	AEN	B11	SMWT#	C11	SD8	D11	DRQ5
A12	SA19	B12	SMPD#	C12	SD9	D12	DACK6
A13	SA18	B13	IOW#	C13	SD10	D13	DRQ6
A14	SA17	B14	IOR#	C14	SD11	D14	DACK7
A15	SA16	B15	DACK3#	C15	SD12	D15	DRQ7
A16	SA15	B16	DRQ3	C16	SD13	D16	B3
A17	SA14	B17	DACK1#	C17	SD14	D17	MASTE
A18	SA13	B18	DRQ1	C18	SD15	D18	B1
A19	SA12	B19	REFRES				
A20	SA11	B20	SYSCLK				
A21	SA10	B21	IRQ7				

Pin#	Assign.	Pin#	Assign.	Pin	Assign.	Pin#	Assign.
A25	SA6	B25	IRQ3	C08			
A26	SA5	B26	DACK2#	C07			
A27	SA4	B27	TC	C06			
A28	SA3	B28	BALE	C05			
A29	SA2	B29	VCC	C04			
A30	SA1	B30	BOSC	C03			
A31	SA0	B31	GND	C02			

Table A-15 ISA Active Backplane Connector Pin Assignments

Pin#	Assign.	Pin#	Assign.	Pin#	Assign.	Pin#	Assign.
A32	VCC	B32	SA0	C32	VCC	D32	SD0
A31	VCC	B31	SA1	C31	VCC	D31	SD1
A30	VCC	B30	SA2	C30	VCC	D30	SD2
A29	VCC	B29	SA3	C29	VCC	D29	SD3
A28	SA16	B28	SA4	C28	ICHK#	D28	SD4
A27	SA17	B27	SA5	C27	ICRDY	D27	SD5
A26	SA18	B26	SA6	C26	BRESET	D26	SD6
A25	SA19	B25	SA7	C25	SMRD#	D25	SD7
A24	LA17	B24	SA8	C24	SMWT#	D24	VCC
A23	LA18	B23	SA9	C23	IOWT#	D23	VCC
A22	LA19	B22	SA10	C22	IORD#	D22	VCC
A21	LA20	B21	SA11	C21	AEN	D21	VCC
A20	LA21	B20	SA12	C20	OWS#	D20	SD8
A19	LA22	B19	SA13	C19	MRD#	D19	SD9
A18	LA23	B18	SA14	C18	MWT#	D18	SD10
A17	TC	B17	SA15	C17	SBHE#	D17	SD11
A16	REFS#	B16	GND	C16	MCS16#	D16	SD12
A15	IRQ3	B15	GND	C15	IOCS16-#	D15	SD13
A14	IRQ4	B14	GND	C14	BALE	D14	SD14
					MAST		

Pin#	Assign.	Pin#	Assign.	Pin	Assign.	Pin#	Assign.
A08	IRQ11	B08	DACK0#	C08	-5V	D08	
A07	IRQ12	B07	DACK1#	C07	-5V	D07	
A06	IRQ14	B06	DACK2#	C06	+12V	D06	
A05	IRQ15	B05	DACK3#	C05	+12V	D05	ATCLK
A04	GND	B04	DACK5#	C04	+12V	D04	
A03	GND	B03	DACK6#	C03	-12V	D03	
A02	GND	B02	DACK7#	C02	-12V	D02	
A01	GND	B01		C01	-12V	D01	BOSC

Appendix B On-Board Industrial Devices

The Hunter hyperCachePlus brings two major industrial devices: A watchdog timer that will reset the system is case of failure according to a pre-set time-out, and a Post Code display that will help you with troubleshooting.

Watchdog Timer

This device can be set as hardware, software or disabled (JP27). The watchdog timer will monitor your motherboard and reset if any problem occurs. The time-out ranges from 1200, 600 and 150 milliseconds (JP26). The Watchdog timer can work in two ways.

Hardware Reset
The watchdog timer monitors the BALE signal. If BALE stops oscillating for the time set at JP26, the watchdog will reset the board.

Software Reset
The software has to access the watchdog timer at least every time-out (JP26) to prevent the board from resetting. This allows a very tight control of the motherboards operation, but involves writing software for the time-out control. For using software control, you need to know the watchdog address(JP32/JP34), the enable bit and the strobe bit. For example, if you set the watchdog timer to address 300h, you have to output a 0 at bit 1 of 300h to enable the watchdog, and then toggle bit 0 of 300h to strobe it. If the strobe signal takes longer than the time-out (JP26) the board will reset.

Watchdog Timeout	1200ms	600ms	150ms
JP26	1-2*	2-3	3-4

Watchdog Selection	Hardware	Disabled	Software
JP27	1-2	3-4*	5-6

Address	JP32	JP34
100	2-3	2-3
110	1-2	2-3
300	2-3	1-2
310	1-2*	1-2*

* Manufacturer Default

Post Code Display

The POST code display is a device implemented on the Hunter hyperCache Plus to help on failure diagnostics. A POST code is transmitted by the BIOS during the POST (Power On Self Test). It is a number that refers to the state or test condition of a circuit or group of circuits. Knowing the results of these tests (hence the POST code) can be very important in debugging a system. Please refer to table B-1 for POST codes.

Table B-1 Post Code Table

Uncompressed INIT code checkpoints

DO NMI is Disabled. CPU ID saved.
Init code Checksum verification starting.

D I To do DMA init, Keyboard controller BAT test, start memory refresh and going to 4GB flat mode.

D3 To start Memory sizing.

D4 To comeback to real mode. Execute OEM patch. Set stack.

D5 EØØØ ROM enabled. Init code is copied to segment 0 and control to be transferred to segment 0.

D6 Control is in segment 0. To check <CTRL><HOME> key and verify main BIOS checksum.

If either <CTRL><HOME> is pressed or main BIOS checksum is bad, go to check point EØ else go to check point D7.

D7 Main BIOS runtime code is to be decompressed and control to be passed to main BIOS in shadow RAM.

EØ On-board Floppy Controller (if any) is initialized.
To start base 512K memory test.

El To initialize interrupt vector table.

E2 To initialize DMA and interrupt controllers.
E6 To enable floppy and timer IRQ, enable internal cache.
ED Initialize floppy drive.
EE Start looking for a diskette in drive A: and read 1 st sector of the diskette.
EF Floppy read error.
FØ Start searching AMIBOOT.ROM'file in root directory.
Fl AMIBOOT.ROM file not present in root directory.
F2 Start reading FAT table and analyze FAT to find the clusters occupied by AMIBOOT.RONT file.
F3 Start reading AMIBOOT.ROM file cluster by cluster.
F4 AMIBOOT.RON file not of proper size.
F5 Disable internal cache.
FB Detect Flash type present.
FC Erase Flash.
FD Program Flash.
FF Flash program successful. BIOS is going to restart.
03 NMI is Disabled. To check soft reset/power-on.
05 BIOS stack set. Going to disable Cache if any.
06 POST code to be uncompressed.
07 CPU init and CPU data area init to be done.
08 CMOS checksum calculation to be done next.
ØB Any initialization before keyboard BAT to be done next.
ØC KB controller I/B free. To issue the BAT command to keyboard controller.
ØE Any initialization after KB controller BAT to be done next.
ØF Keyboard command byte to be written.
10 Going to issue Pin-23,24 blocking/unblocking command.
I I Going to check pressing of <INS>, <END> key during power-on.
12 To init CMOS if "Init CMOS in every boot" is set or <END> key is pressed. Going to disable DMA and Interrupt controllers.
13 Video display is disabled and port-B is initialized. Chipset init about to begin.
14 8254 timer test about to start.
19 About to start memory refresh test.
1A Memory Refresh line is toggling. Going to check 15us ON/OFF time.
23 To read 8042 input port and disable Megakey Green PC feature. Make BIOS code segment writeable.
24 To do any setup before Int vector init.
25 Interrupt vector initialization about to begin. To clear password if necessary.
27 Any initialization before setting video mode to be done.

28 Going for monochrome mode and color mode setting.
2A Different BUSes init (system, static, output devices) to start if present.
2B To give control for any setup required before optional video ROM check.
2C To look for optional video ROM and give control.
2D To give control to do any processing after video ROM returns control.
2E If EGANGA not found then do display memory R/W test.
2F EGA/VGA not found. Display memory R/W test about to begin.
30 Display memory R/W test passed. About to look for the retrace checking
31 Display memory R/W test or retrace checking failed. To do alternate Display memory R/W test.
32 Alternate Display memory R/W test passed. To look for the alternate display retrace checking.
34 Video display checking over. Display mode to be set next.
37 Display mode set. Going to display the power on message.
38 Different BUSes init (input, IPL, general devices) to start if present.
39 Display different BUSes initialization error messages.
3A New cursor position read and saved. To display the "HIT <DEL>" message.
40 To prepare the descriptor tables.
42 To enter in virtual mode for memory test.
43 To enable interrupts for diagnostics mode.
44 To initialize data to check memory wrap around at 0:0.
45 Data initialized. Going to check for memory wrap around at 0:0 and finding the total system memory size.
46 Memory wrap around test done. Memory size calculation over. About to go for writing patterns to test memory.
47 Pattern to be tested written in extended memory.
Going to write patterns in base 640k memory.
48 Patterns written in base memory.
Going to findout amount of memory below 1M memory.
49 Amount of memory below I M found and verified.
Going to find out amount of memory above IM memory.
4B Amount of memory above 1MB found and verified.
Check for soft reset and going to clear memory below 1MB for soft reset. (If power on, go to check point# 4Eh).
4C Memory below 1MB cleared. (SOFT RESET)
Going to clear memory above 1MB.
4D Memory above 1MB cleared. (SOFT RESET)
Going to save the memory size. (Goto check point# 52h).

4E	Memory test started. (NOT SOFT RESET) About to display the first 64k memory size.
4F	Memory size display started. This will be updated during memory test. Going for sequential and random memory test.
50	Memory testing/initialization below 1MB complete. Going to adjust displayed memory size for relocation/ shadow.
5 1	Memory size display adjusted due to relocation/ shadow. Memory test above 1MB to follow.
52	Memory testing/initialization above 1MB complete. Going to save memory size information.
53	Memory size information is saved. CPU registers are saved. Going to enter in real mode.
54	Shutdown successful, CPU in real mode. Going to disable gate A2Ø line and disable parity/NMI.
57	A20 address line, parity/NMI disable successful. Going to adjust memory size depending on relocation/shadow.
58	Memory size adjusted for relocation/shadow. Going to clear hit <DEL> message.
59	Hit <DEL> message cleared. <WAIT ... > message displayed. About to start DMA and interrupt controller test.
60	DMA page register test passed. To do DMA#1 base register test.
62	DMA#1 base register test passed. To do DMA#2 base register test.
65	DMA#2 base register test passed. To program DMA unit 1 and 2.
66	DMA unit 1 and 2 programing over. To initialize 8259 interrupt controller.
7F	Extended NMI sources enabling is in progress.
80	Keyboard test started. Clearing output buffer, checking for stuck key, to issue keyboard reset command.
81	Keyboard reset error/stuck key found. To issue keyboard controller interface test command.
82	Keyboard controller interface test over. To write command byte and init circular buffer.
83	Comand byte written, Global data init done. To check for lock-key.
84	Lock-key checking over. To check for memory size mismatch with CMOS.
85	Memory size check done. To display soft error and check for password or bypass setup.
86	Password checked. About to do programing before setup.
87	Programming before setup complete. To uncompress SETUP code and execute CMOS setup.

88	Returned from CMOS setup program and screen is cleared. About to do programming after setup.
89	Programming after setup complete. Going to display power on screen message.
8B	First screen message displayed. <WAIT... > message displayed. PS/2 Mouse check and extended BIOS data area allocation to be done.
8C	Setup options programming after CMOS setup about to start.
8D	Going for hard disk controller reset.
8F	Hard disk controller reset done. Floppy setup to be done next.
91	Floppy setup complete. Hard disk setup to be done next.
95	Init of different BUSes optional ROMs from C800 to start.
96	Going to do any init before C800 optional ROM control.
97	Any init before C800 optional ROM control is over. Optional ROM check and control will be done next.
98	Optional ROM control is done. About to give control to do any required processing after optional ROM returns control and enable external cache.
99	Any initialization required after optional ROM test over. Going to setup timer data area and printer base address.
9A	Return after setting timer and printer base address. Going to set the RS-232 base address.
9B	Returned after RS-232 base address. Going to do any initialization before Coprocessor test.
9C	Required initialization before Coprocessor is over. Going to initialize the Coprocessor next.
9D	Coprocessor initialized. Going to do any initialization after Coprocessor test.
9E	Initialization after Coprocessor test is complete. Going to check extended keyboard, keyboard ID and num-lock. Keyboard ID command
A2	Going to display any soft errors.
A3	Soft error display complete. Going to set keyboard typematic rate.
A4	Keyboard typematic rate set. To program memory wait states.
A5	Going to enable parity/NMI.
A7	NMI and parity enabled. Going to do any initialization required before giving control to optional ROM at EØØØ.
A8	Initialization before EØØØ ROM control over. EØØØ ROM to get control next.
A9	Returned from EØØØ ROM control. Going to do any initializa tion required after EØØØ optional ROM control.
AA	Initialization after EØØØ optional ROM control is over. Going to display the system configuration.

AB	To uncompress DMI data and execute DMI POST init.
BØ	System configuration is displayed.
B1	Going to copy any code to specific area.
00	Copying of code to specific area done.
	Going to give control to INT-19 boot loader.

User's Notes:

Appendix C Flash BIOS programming

The Hunter hyperCache Plus offers the optional FLASH BIOS. When installed, you will be able to update your BIOS without having to replace the EPROM. The WinBios will read the new BIOS file from a floppy disk, replace the old BIOS and reboot your computer.

When updating your BIOS, make sure you have a disk with the correct BIOS file (its size should be 128K).
Rename the file to "AMIBOOT.ROM". Turn your computer off. Insert the disk in Drive A:, turn the computer on while pressing <CTRL><HOME>. Your computer will show no screen, but will beep to indicate what is being done.

If the programming is successful, you should hear 4 beeps and your computer will reboot with the new BIOS.

Please never turn the power off while reprogramming a FLASH BIOS. Refer to the table on the next page for beep errors.

Select JP12 for the correct programming voltage.

Flash BIOS Voltage Programing	12V	5V
JP12	1-2	2-3*

Table C-1 Flash Bios Beep Erros

Beeps	Description
1	Insert diskette in floppy A:
2	The AMIBOOT.ROM file was not found in the root directory of floppy drive A:
3	Base memory error
4	Flash program successful
5	Floppy read error
6	Keyboard controller BAT command failed
7	No FLASH EPROM detected
8	Floppy controller failure
9	Boot Block BIOS checksum error
10	Flash erase error

Appendix D Disk-On-Chip

The Hunter hyperCache Plus offers an on-board flash disk. The Disk-On-Chip is a single chip flash disk device in a standard 32-pin DIP socket.

It features up to 144MB of storage capacity with high-speed boot-up capabilities, including the Flash File System (FFS) for easy storage.

This feature of the Hunter hyperCache Plus is a perfect replacement for conventional hard-drives in the harsh industrial environment where shock and vibration is a burden for standard hard drives.

There are two Jumpers dedicated for the Disk-on-Chip address programing, JP31 and JP33 please check the table below.

Address	JP31	JP33
D000H	2-3	2-3
D400H	2-3	1-2
D800H	1-2	2-2
DC00H	1-2	1-2

For upgrade and technical specifications about Disk-on-chip, please contact the manufacturer at www.msystems.com.

User's Notes:

Appendix E Active Backplane™ Connection

The Hunter hyperCache Plus features a 128 pin connector to be attached to the Active Backplane™.

This is a proprietary design that also can be used for custom applications; therefore, a pin out table is available in this manual.

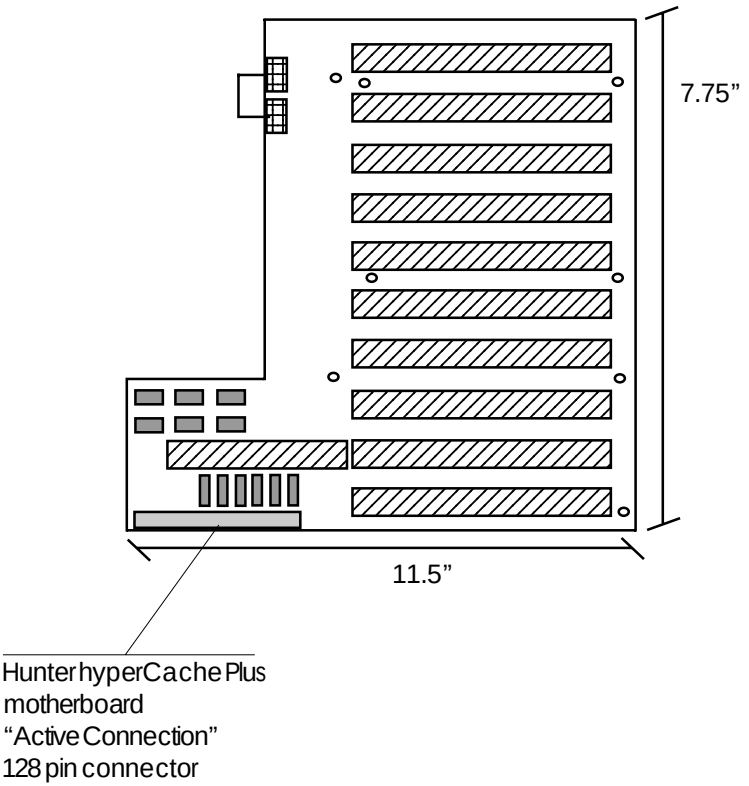


Table D-1 ISA Active Backplane™ Connector Pin Assignments

Pin#	Assign.	Pin#	Assign.	Pin#	Assign.	Pin#	Assign.
A32	VCC	B32	SA0	C32	VCC	D32	SD0
A31	VCC	B31	SA1	C31	VCC	D31	SD1
A30	VCC	B30	SA2	C30	VCC	D30	SD2
A29	VCC	B29	SA3	C29	VCC	D29	SD3
A28	SA16	B28	SA4	C28	ICHK#	D28	SD4
A27	SA17	B27	SA5	C27	ICRDY	D27	SD5
A26	SA18	B26	SA6	C26	BRESET	D26	SD6
A25	SA19	B25	SA7	C25	SMRD#	D25	SD7
A24	LA17	B24	SA8	C24	SMWT#	D24	VCC
A23	LA18	B23	SA9	C23	IOWT#	D23	VCC
A22	LA19	B22	SA10	C22	IORD#	D22	VCC
A21	LA20	B21	SA11	C21	AEN	D21	VCC
A20	LA21	B20	SA12	C20	OWS#	D20	SD8
A19	LA22	B19	SA13	C19	MRD#	D19	SD9
A18	LA23	B18	SA14	C18	MWT#	D18	SD10
A17	TC	B17	SA15	C17	SBHE#	D17	SD11
A16	REFS#	B16	GND	C16	MCS16#	D16	SD12
A15	IRQ3	B15	GND	C15	IOCS16#	D15	SD13
A14	IRQ4	B14	GND	C14	BALE	D14	SD14

Pin#	Assign.	Pin#	Assign.	Pin	Assign.	Pin#	Assign.
A08	IRQ11	B08	DACK0#	C08	-5V	D08	
A07	IRQ12	B07	DACK1#	C07	-5V	D07	
A06	IRQ14	B06	DACK2#	C06	+12V	D06	
A05	IRQ15	B05	DACK3#	C05	+12V	D05	ATCLK
A04	GND	B04	DACK5#	C04	+12V	D04	
A03	GND	B03	DACK6#	C03	-12V	D03	
A02	GND	B02	DACK7#	C02	-12V	D02	
A01	GND	B01		C01	-12V	D01	BOSC

User's Notes: