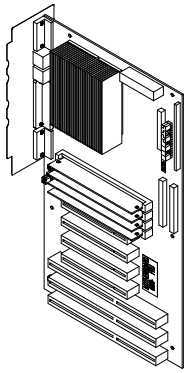
Allen-Bradley

Processor Board

(For 6180 Industrial Computers)

User Manual



Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

Throughout this manual we use notes to make you aware of safety considerations:

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attention statements help you to:

- identify a hazard
- avoid the hazard
- recognize the consequences

Important: Identifies information that is critical for successful application and understanding of the product.

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Using this Manual

Read this preface to familiarize yourself with the rest of the manual. This preface covers the following topics:

- who should use this manual
- the purpose of this manual
- contents of this manual
- conventions used in this manual
- Allen-Bradley support

Who Should Use this Manual

Use this manual if you are responsible for installing or removing the processor board in the 6180 Industrial Computer or connecting components to the processor board.

You should have a basic understanding of computers and the 6180 Industrial Computer.

Purpose of this Manual

This manual is a *user guide* for the 6180 Computer Processor Board. It gives an overview of the board components and describes procedures for configuring system setup values.

Contents of this Manual

Chapter	Title	Contents
	Preface	Describes the purpose, background, and scope of this manual. Also specifies the audience for whom this manual is intended.
1	System Features	Gives an overview of the processor board features.
2	Processor Board	Describes components of the processor board including front panel connectors and configuration jumpers.
3	Using the Setup Program	Tells how to use the Setup program built into the system BIOS to configure system setup parameters. Available settings and defaults are provided for each setup option.
Appendix A	Specifications	Provides physical, electrical, environmental, and functional specifications for the 6180 Computer system.
Appendix B	Processor Board Connectors	Illustrates the various connectors on the processor board with pinouts.

Manual Conventions

The following conventions are used throughout this manual:

- Bulleted lists such as this one provide information, not procedural steps.
- Numbered lists provide sequential steps or hierarchical information.

Allen-Bradley Support

Allen-Bradley offers support services worldwide, with over 75 Sales/Support Offices, 512 authorized Distributors and 260 authorized Systems Integrators located throughout the United States alone, plus Allen-Bradley representatives in every major country in the world.

Local Product Support

Contact your local Allen-Bradley representative for:

- sales and order support
- product technical training
- warranty support
- support service agreements

Technical Product Assistance

If you need to contact Allen-Bradley for technical assistance, please review the information in the *Troubleshooting* chapter first. Then call your local Allen-Bradley representative.

System Features

Chapter Objectives

This chapter describes features of the processor board used by the 6180 Industrial Computer.

System I/O

The onboard I/O controller (National Semiconductor 306B) integrates the functions for the serial ports, parallel port, diskette drives, RTC and keyboard. This component provides:

- Multi-mode bi-directional parallel port
  - Standard mode; IBM and Centronics compatible
  - Enhanced Parallel Port (EPP) with BIOS/Driver support
  - High-speed mode; Extended Capabilities Port (ECP) compatible
- Integrated real time clock with an accuracy of $\pm$ 13 minutes/year
- Integrated 8042 compatible keyboard controller
- Industry standard diskette driver controller with 16 byte data FIFO (2.88 MB floppy support)
- Support for IrDA-compliant (version 2.0) infrared interface. The infrared interface supports data transfer rates of up to 115 Kbaud with either half- or full-duplex operation. In full-duplex mode, both the transmitter and receiver are enabled simultaneously for faster throughput.
- A 242-byte battery backed CMOS RAM
- Two NS16C550-compatible UARTs with send/receive byte FIFO

System BIOS

The system BIOS provides ISA and PCI compatibility. The BIOS is stored in Flash EEPROM on the processor board. The BIOS provides the power-on self test (POST), the system Setup program, the PCI and IDE configuration utility, the Windows 95 Plug and Play and the BIOS recovery code.

The system BIOS supports shadowing, which allows the BIOS to be executed from 64-bit onboard DRAM.

Real-time Clock and CMOS RAM

The onboard I/O controller provides a real-time clock and CMOS RAM. You can set the time for the clock and set/clear the system values stored in CMOS RAM using the BIOS Setup program described in Chapter 3.

BIOS Upgrades

Because the BIOS is stored in flash memory, upgrades are easy. A utility will be provided on disk to update the BIOS when applicable. Chapter 2 tells how to run the BIOS Recovery Utility.

Expansion Slots

The system has 6 slots (3 PCI, 2 ISA, and 1 shared ISA/PCI). The ATX form factor allows you to add full-length add-in cards in any slot (see note below). The 6180 Industrial Computer User Manual tells how to install add-in boards.

Note: Installation of a drive in the lower bay reduces the number of slots available for full sized cards to 1 ISA, 1 Shared and 3 PCI. In addition, other slots may be filled by other cards (video - 1 PCI slot and Keyboard Interface Card - 1 ISA slot).

PCI Auto-Configuration

The PCI Auto-Configuration utility operates with the system Setup program to allow the insertion or removal of PCI add-in boards to the system. When you turn on the system after adding a PCI board, the BIOS automatically configures interrupts, I/O space, and other parameters. Since PCI add-in boards use the same interrupts as ISA add-in boards, you must specify the interrupts used by the ISA boards using the Setup program. See Chapter 3.

IDE Auto-Configuration

If you install an IDE drive in the system, the Setup program automatically detects and configures the drive for optimum performance if Configuration Mode is set to Auto. This eliminates the need to enter the Setup program after installing the IDE drive.

The setup program automatically configures the IDE drive for Logical Block Addressing (LBA). You can override the setting by selecting Manual for Configuration mode.

ISA Plug and Play

The system allows auto-configuration of Plug and Play ISA cards, PCI cards, and resource management for legacy ISA cards when using the ISA Configuration Utility. This utility also supports Windows 95 plug and play capabilities.

Security

You can authorize full or limited access to the system by setting passwords in the Setup program. There are two levels of passwords: Administrative password and User password. The Administrative password allows full access to the system. The User password allows limited access to setup options. See Chapter 3.

Advanced Power Management

The system supports Advanced Power Management (APM). To enable the energy saving Stand By mode, you can:

- initiate a keyboard hot key sequence
- specify a time-out period

IrDA

The IrDA link supports up to 115 Kilobytes of data per second at a distance of up to 1 meter.

IrDA is an Industrial Standard for Infrared Communications.

Processor Board

Chapter Objectives

This chapter describes components of the processor board and the system BIOS which configures system components. Topics include:

- access, installation and removal of board components
- system BIOS
- processor board components
- front panel connectors
- configuration jumpers

Access, Installation, and Removal of Board

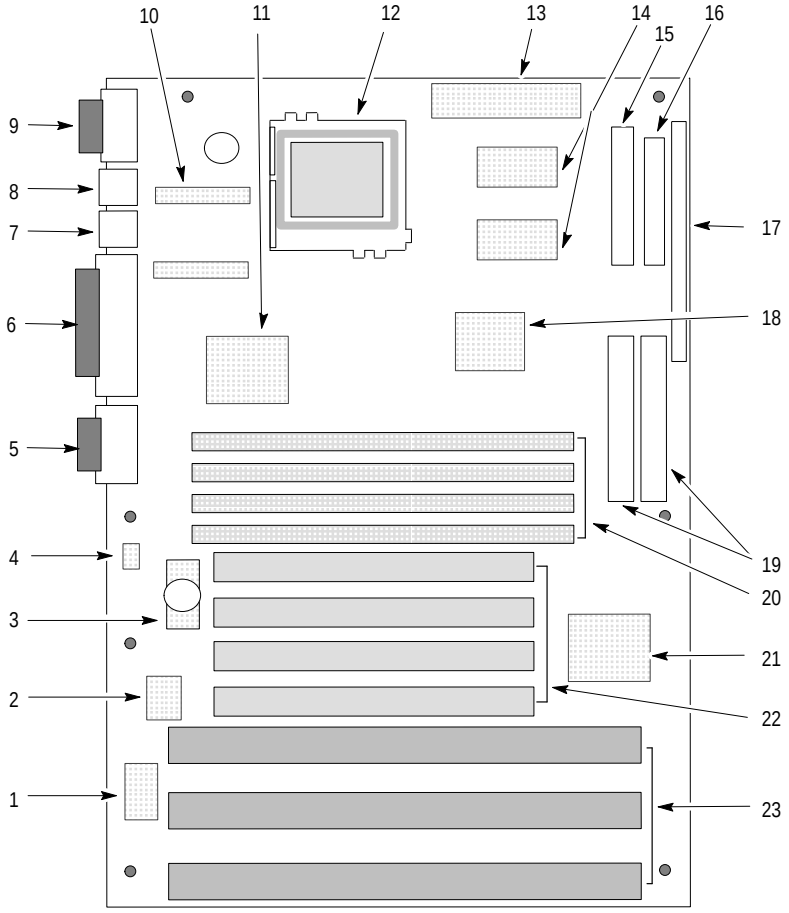
Installation and removal of the processor board is described in the 6180 Industrial Computer User Manual.

To access the processor board, you will need to remove the back cover. You may also have to remove other boards. See the 6180 Industrial Computer User Manual.

System BIOS

The Basic Input / Output System (BIOS) is a set of instructions for the processor board stored in Read Only Memory (ROM). These instructions allow the processor board to interact with the other boards and hardware that make up a 6180 Computer. Chapter 3 tells how to use the Setup program to configure the BIOS.

Processor Board Components



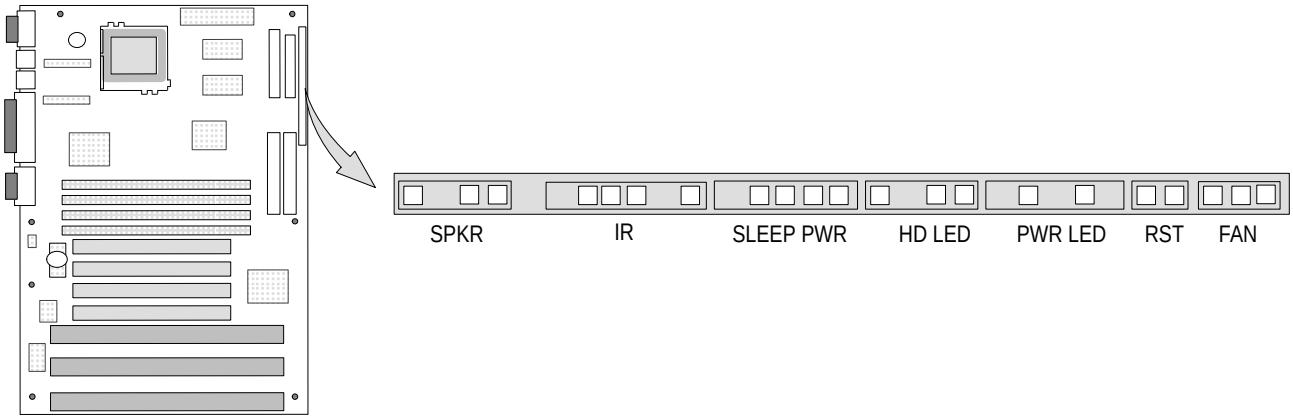
Item	Description	Item	Description
1	2 MB TSOP FLASH (U181)	13	Primary Power Connector (J6M1)
2	1 MB PLCC FLASH (U182)	14	PB SRAM Sites (U6K1, U6L1)
3	CMOS Battery (BH2E1) Sony CR2032 or Equivalent	15	Floppy Drive Connector (J7L1)
4	Recovery Jumper (J1F1)	16	Configuration Jumper Block (J7K1)
5	COM 1 Serial Port (J1G1)	17	Front Panel Header (J7K2)
6	Parallel Port ((J1J1)	18	BGA 82430HX (U5H1)
7	PS/2 Keyboard Port (J1K1)	19	IDE Connectors (J7G1, J7G2)
8	PS/2 Mouse Port (J1L1)	20	SIMM Sockets-Qty 4 (J4F1, J4F2, J4G1, J4G2)
9	COM 2 Serial Port (J1M1)	21	PIIX3 (U6D1)
10	Linear Voltage Regulator (Q2K1)	22	PCI Connectors-Qty 4 (J4C1, J4D1, J4E1, J4E2)
11	National 306B I/O Controller (U2H1)	23	ISA Connectors-Qty 3 (J4A1, J4B1, J4B2)
12	Pentium Processor – Socket 7 (U3K1)		

Front Panel Connectors

The front panel connectors on the processor board support:

- System Reset
- Power LED
- Hard Drive Activity LED
- System Speaker
- CPU Fan
- Infrared (IrDA) port
- Sleep/Resume

Some of these front panel connections may or may not be used depending on the 6180 Computer hardware configuration.



Infra-red (IrDA) Connector

Serial port 2 may be configured to support an IrDA module through the 6-pin front panel connector. Once configured for IrDA, files can be transferred to/from portable devices using application software such as LapLink™. Appendix B shows the IrDA connections.

Reset

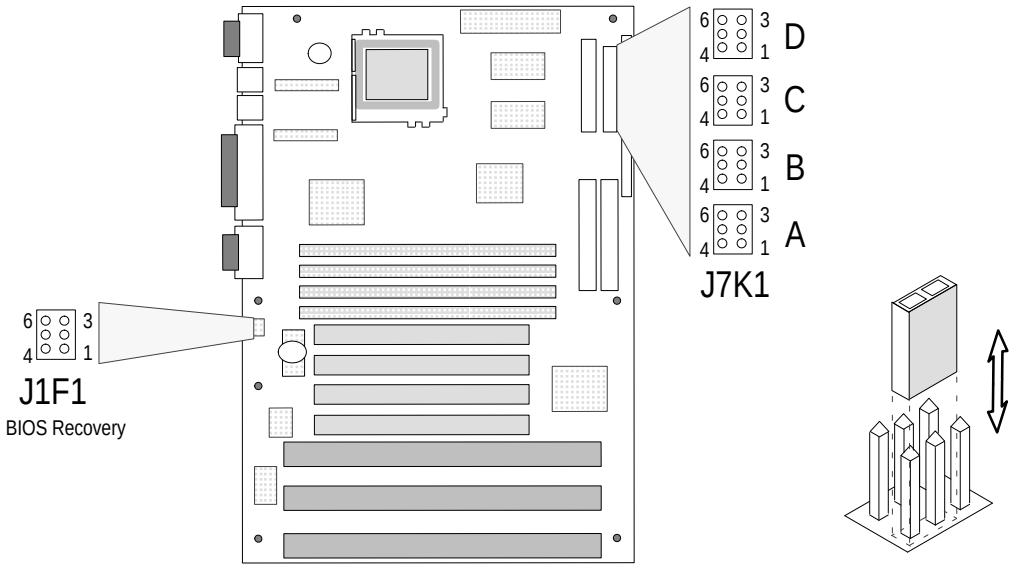
Connections for a Reset button (2-pin SPST, normally open) provide for a hard reset. Appendix B shows the Reset connections.

CPU Fan

Connections for a CPU Fan. Appendix B shows the fan connections.

Configuration Jumpers

There are 2 jumper sets (J1F1 and J7K1) for configuring the processor board. The processor board is shipped with the default settings indicated below.



Configuration Jumpers

Function	Jumper	Settings
Host Bus Speed ①	J7K1-C	See CPU/System Speed Table next page.
CPU Speed Ratio	J7K1-D	See CPU/System Speed Table next page.
CMOS Clear	J7K1-A	4-5 Keep (default) 5-6 Clear
Password Clear	J7K1-A	1-2 Password Enabled (default) 2-3 Password Clear/Disabled
BIOS Setup Access	J7K1-B	1-2 Access Allowed (default) 2-3 Access Denied
STD/VRE	J7K1-B	4-5 STD (default) 5-6 VRE
BIOS Recovery	J1F1	1-2 Recovery Boot Disable (default) 2-3 Recovery Boot Enable

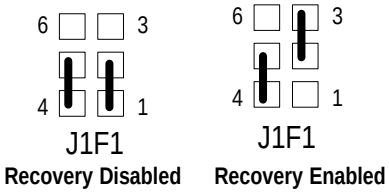
① CPU & Host Bus speed.

CPU/System Speed Settings

CPU Frequency (MHz)	Host Bus Frequency (MHz)	Jumper J7K1-C	Jumper K7K1-D	CPU Clock Multiplier	Jumper J7K1-B
200	66	1-2, 5-6	1-2, 5-6	3	The STD/VRE setting depends on 4-5 for STD, 5-6 for VRE
166	66	1-2, 5-6	2-3, 5-6	2.5	
150	60	2-3, 4-5	2-3, 5-6	2.5	
133	66	1-2, 5-6	2-3, 4-5	2.5	
120	60	2-3, 4-5	2-3, 4-5	2	
100	66	1-2, 5-6	1-2, 4-5	2	
90	60	2-3, 4-5	1-2, 4-5	1.5	
75	50	2-3, 5-6	1-2, 4-5	1.5	
Reserved	-	2-3, 5-6	1-2, 5-6		
Reserved	-	2-3, 4-5	1-2, 5-6		

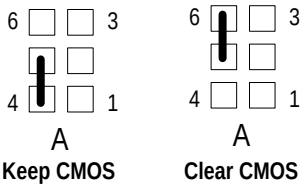
BIOS Recovery (Jumper J1F1 / Pins 1,2,3)

It is unlikely that a BIOS Flash Upgrade process would be interrupted. However, if an interruption occurs that prevents the upgrade from continuing, you may need to use the BIOS recovery. Moving the jumper from pins 1-2 (Normal Operation) to pins 2-3 (Recovery) and then turning the system on loads the BIOS upgrade from a diskette in the floppy drive. After recovery, the upgrade process can be continued.



Clear CMOS (Jumper J7K1-A / Pins 4,5,6)

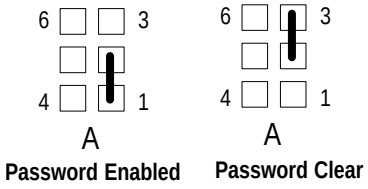
Moving the jumper from pins 4-5 (Keep) to pins 5-6 (Clear) and then turning the system on, resets the CMOS settings to default values.



After the system indicates “NVRAM Cleared by Jumper”, turn the system off and return the jumper to the 4-5 position.

Clear Password (Jumper J7K1-A / Pins 1,2,3)

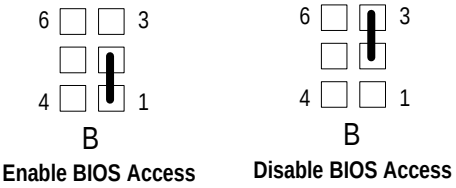
Moving the jumper from pins 1-2 (Password Enabled) to pins 2-3 (Password Clear) and then turning the system on, clears the system password.



After clearing the password, turn the system off and then change the jumper back to pins 1-2. Only clear the password if the user password has been forgotten. Leaving the jumper in the pin 2-3 position disables the password.

BIOS Setup Access (Jumper J7K1-B, Pins 1,2,3)

Moving the jumper from pins 1-2 to pins 2-3 disables access to the BIOS Setup program.

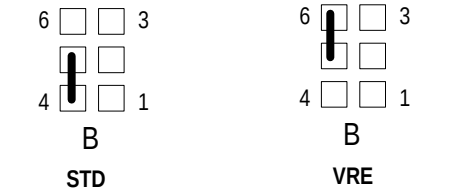


CMOS access enabled (pins 1-2) is the default position.

STD/VRE (Jumper J7K1-B, Pins 4,5,6)

This jumper controls the voltage level to the Pentium® processor. Different speeds or stepping of Pentium processors may require a different voltage setting. The voltages are as follows:

- STD: 3.135V – 3.6V
- VRE: 3.4V – 3.6V



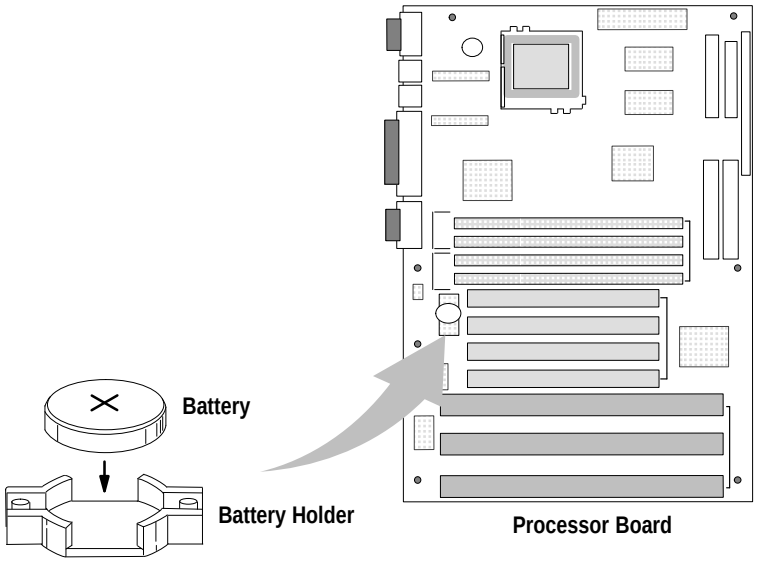
Replacing the Battery (RTC & CMOS)

A lithium battery on the processor board provides power for the Real Time Clock (RTC) and CMOS RAM. This battery has an estimated life expectancy of three years if power is not applied to the system and seven years if power is applied. When the battery loses power, system settings (stored in CMOS RAM) such as the time / date may be wrong. The figure below shows the location of the battery.

The replacement battery must be a 220 mAh coin cell lithium battery that is compatible with the Sony CR2032 battery.

ATTENTION: Disconnect all power from the 6180 Computer before removing components. Failure to disconnect power could result in severe electrical shock or damage to the 6180 Computer.

ATTENTION: Wear a wrist strap (well grounded) and perform work in a static safe environment. Electrostatic discharge can damage the 6180 Computer and components.



To replace the battery:

1. Disconnect power from the 6180 Computer.
2. Remove the back panel. Refer to the 6180 Industrial Computer user manual.
3. Remove any boards that may interfere with your access to the battery. Refer to the 6180 Industrial Computer user manual.

4. Lift up on the battery with the tip of your finger and remove battery.

CAUTION: Danger of explosion if lithium battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer (220mAh Sony CR2032). Dispose of used batteries according to the manufacturer's instructions.

5. Install the new battery with the plus + facing away from the battery socket as shown on the previous page.
6. Install any removed boards and back panel.
7. You will need to set the system date and time. Refer to Chapter 3 for details on using the BIOS Setup Program.
8. When disposing of the old battery, refer to the battery manufacturer's instructions. There may also be additional disposal regulations in your area.

ATTENTION: The battery module contains lithium. Do not attempt to dispose of it in a fire or incinerator, it may explode. Always follow regulations in your area for lithium battery disposal.

BIOS Setup Program

Chapter Objectives

This chapter tells how to use the Setup program built into the system BIOS.

Overview of the Setup Program

The Setup program allows you to change the configuration (such as the type of peripherals installed) and the boot-up sequence of the system BIOS. The Setup parameters are stored in CMOS random access memory (RAM) and is backed up by a battery when power to the system is off.

Recording the System Configuration

Keep a reference of your system's setup parameters and update this record when settings are changed.

Accessing the Setup Program

To use the Setup program, reboot the system and press [F1] when you see the message "Press F1 to Enter Setup". You have about 5 seconds to press [F1] before the boot process continues.

Note: You can disable access to the Setup program in system BIOS using a configuration board jumper. See page 2–6.

If you can't enter BIOS Setup:

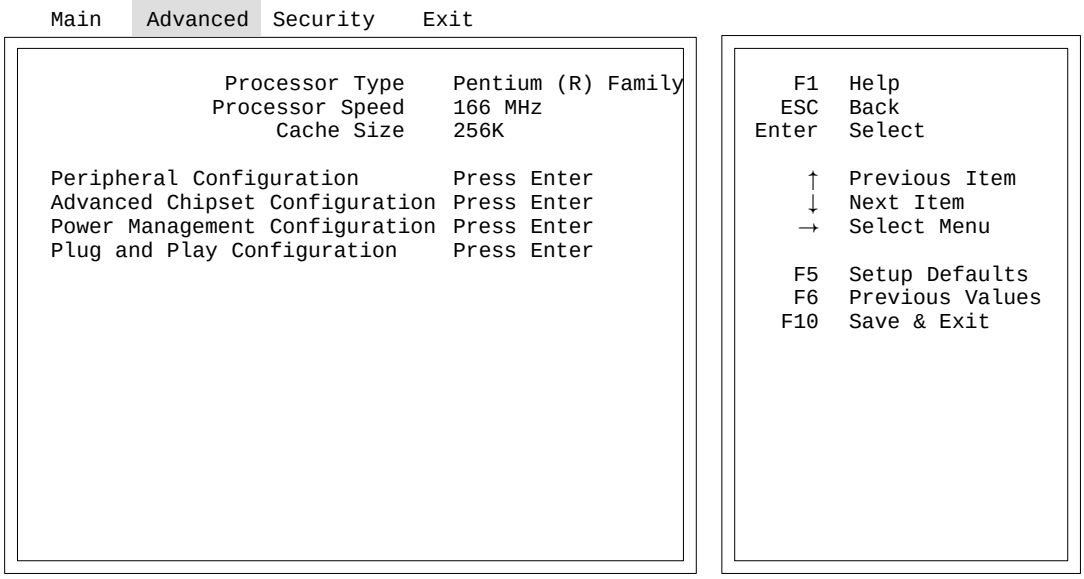
- Check position BIOS enable jumper, see Chapter 2. The jumper may be set so that access to the BIOS Setup is disabled. If the jumper enables access to BIOS Setup, you may have to clear CMOS RAM to default values. This is done by moving the Clear CMOS jumper to the Clear position and cycling power. You can then reconfigure the setup values.

Main Menu Options

Main Menu Options	Sub Menu Options	AB Default	Description
System Date			Specifies the current date. Select the month from a popup menu.
System Time			Specifies the current time.
Floppy Options	Floppy A:		Reports if diskette drive is connected to the system. No options.
	Floppy B:		Reports if a second diskette drive is connected to the system.
	Floppy A: Type	1.44 / 1.25 MB, 3.5 inch Disabled if Floppy option not selected	Specifies the physical size and capacity of the diskette drive. The options are: •Disabled •360 KB, 5.25 inch •1.2 MB, 5.25 inch •1.44/1.25 MB, 3.25 inch •2.88 MB, 3.5 inch
	Floppy B: Type	Disabled	Specifies the physical size and capacity of the diskette drive. The options are: •Disabled •360 KB, 5.25 inch •1.2 MB, 5.25 inch •1.44/1.25 MB, 3.25 inch •2.88 MB, 3.5 inch
Hard Disk C, D, E, F	Hard Disk Type	Auto Configured	Manually configure the hard drive or have the system auto configure it. •User Definable •Auto Configured If you select User Definable, the Number of Cylinders, Number of Heads, and Number of Sectors can be modified.
	Number of Cylinders	Auto Configured	If Hard Disk Type is set to User Definable, you must enter the number of cylinders. If Hard Disk Type is set to Auto Configured, the number of cylinders is displayed (read only field).
	Number of Heads	Auto Configured	If Hard Disk Type is set to User Definable, you must enter the number of heads. If Hard Disk Type is set to Auto Configured, the number of heads is displayed (read only field).
	Number of Sectors	Auto Configured	If Hard Disk Type is set to User Definable, you must enter the number of sectors. If Hard Disk Type is set to Auto Configured, the number of sectors is displayed (read only field).
	Maximum Capacity		Displays the maximum capacity of your hard disk (read only field). It is calculated from the number of cylinders, heads, and sectors.
	IDE Translation Mode	Auto Detected	Specifies the IDE translation mode. The options are: •Standard CHS (less than 1024 cylinders) •Logical Block •Extended CHS (more than 1024 cylinders) •Auto Detected (BIOS detects IDE drive support for LBA) **Important:** Do not change this option after the hard drive has been formatted. Data may be corrupted.
	Multiple Sector Setting	Auto Detected	Sets the number of sectors transferred by an IDE drive per interrupt generated. The options are: •Disabled •4 Sectors/Block •Auto Detected Check the specifications for your hard disk drive to determine which setting provides optimum performance.
	Fast Programmed I/O Modes	Auto Detected	Sets how fast transfers on the IDE interface occur. The options are: •Disabled •Auto Detected If set to disabled, transfers occur at less than optimized speed.

Main Menu Options	Sub Menu Options	AB Default	Description
Language	Language	English	Specifies the language used for text strings and help in the Setup program and the BIOS. The options are: •English •German •Italian •French •Spanish Only one language can be resident at one time.
Boot Options	First, Second, Third, Fourth Boot Device	First: Floppy Second: Hard Disk Third: Disabled Fourth: Disabled	Sets which drives the system checks first to find an operating system to boot from. For First Boot Device, the options are: Disabled, Floppy, Hard Disk, CD-ROM, Network. For Second, Third, or Fourth Boot Device, the options are: Disabled, Floppy, Hard Disk, Network.
	System Cache	Enabled	Enables or disables both the primary and secondary cache memory.
	Boot Speed	Turbo	Sets the system's boot speed. •Deturbo •Turbo If Turbo is selected, boot-up occurs at full speed. If Deturbo is selected, the board operates at a slower speed.
	Num Lock	Off	Sets the beginning state of the Num Lock feature on your keyboard. The options are: •On •Off
	Setup Prompt	Enabled	Enables or disables the "Press <F1> Key if you want to run Setup" prompt during powerup. This option does not affect the ability to access BIOS Setup, it only toggles the prompt.
	Hard Disk Pre-Delay	Disabled	Sets the hard disk drive pre-delay. Options are 3,6,9,12, or 15 seconds. A pre-delay causes the BIOS to wait the specified time before accessing the first hard drive. A pre-delay provides additional time for a hard drive to initialize.
	Typematic Rate Programming	Default	Sets the typematic rates. The options are: •Default •Override Override enables Typematic Rate Delay and Typematic Rate.
	Typematic Rate Delay	250	If Typematic Rate Programming is set to Override, this option sets how long it takes for a key repeat when you hold down a key on the keyboard. The options are 250, 500, 750, and 1000 millisecond delays. The default is 250. If the Typematic Rate Programming is set to Default, this option will not be visible.
	Typematic Rate	6	If Typematic Rate Programming is set to Override, this option sets the speed at which characters repeat. The higher the number, The faster the characters repeat. The options are 6,8,10,12,20,24, and 30 characters per second. If the Typematic Rate Programming is set to Default, this option will not be visible.
	Scan User Flash Area	Disabled	Enables or disables scanning of User Flash Area for option ROMs.
Video Mode			Displays the video mode (read only).
Mouse			Displays if a mouse is installed or not (read only).
Base Memory			Displays the amount of base memory (read only).
Extended Memory			Displays the amount of extended memory (read only).

Advanced Menu Options

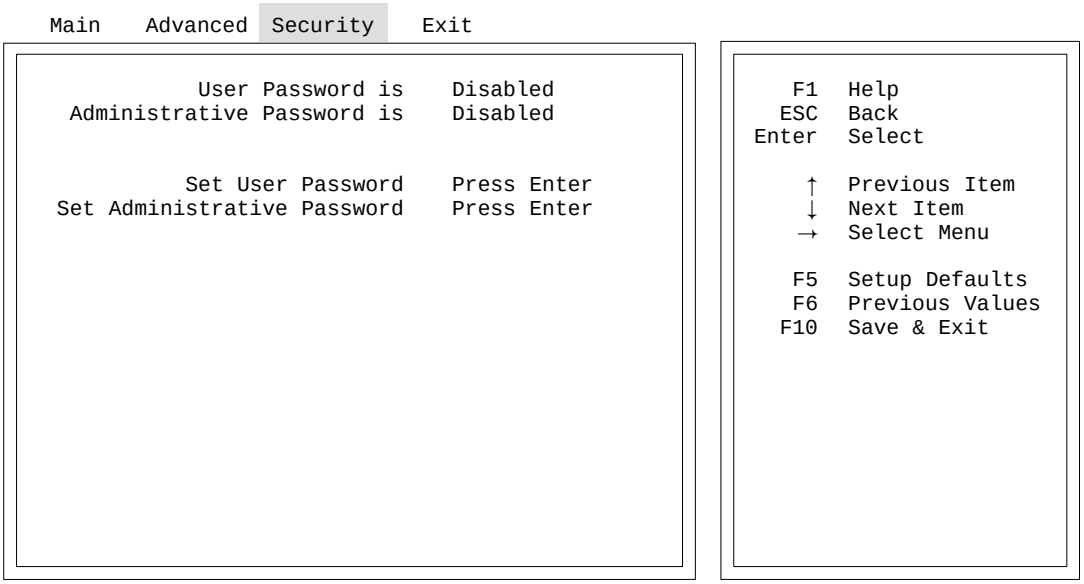


Advanced Menu Options	Sub Menu Options	AB Default	Description
Processor Type			Displays the CPU type (read only).
Processor Speed			Displays the CPU clock speed (read only).
Cache Size			Displays the size of the secondary cache (read only). If your system does not have an L2 cache, this item does not appear.
	Configuration Mode	Auto	Determines whether the peripheral configuration is set by you or if the system handles it automatically. The options are: •Auto •Manual When Auto is selected, the system peripherals (PCI IDE Interface, Floppy Interface, Serial Port 1 and Serial Port 2 Addresses, Serial Port 2 IR Mode, and the Parallel Port Address) are automatically configured during powerup and cannot be modified.
	PCI IDE Interface	Enabled	Enables or disables the PCI IDE hard disk interface. This option cannot be edited if Auto was selected.
	Floppy Interface	Enabled	Enables or disables the floppy disk interface. This option cannot be edited if Auto was selected.
	Serial Port 1 Address	COM1,3F8H,IRQ4	Selects the address of the serial port. The options are: •Disabled •COM1,3F8H,IRQ4 •COM2,2F8H,IRQ3 •COM3,3E8H,IRQ4 •COM4,2E8H,IRQ3 •COM1,3F8H,IRQ3 •COM2,2F8H,IRQ4 •COM3,3E8H,IRQ3 •COM4,2E8H,IRQ4 If the Configuration Mode is set to Auto, the Setup program assigns the first free COM port (normally COM1,3F8H) as the serial port regardless of the serial 1 port address option.

Advanced Menu Options	Sub Menu Options	AB Default	Description
Peripheral Configuration	Serial Port 2 Address	COM2,2F8H,IRQ3	Selects the address of the serial port. The options are: •Disabled •COM1,3F8H,IRQ4 •COM2,2F8H,IRQ3 •COM3,3E8H,IRQ4 •COM4,2E8H,IRQ3 •COM1,3F8H,IRQ3 •COM2,2F8H,IRQ4 •COM3,3E8H,IRQ3 •COM4,2E8H,IRQ4 If the Configuration Mode is set to Auto, the Setup program assigns the first free COM port (normally COM2,2F8H) as the serial port regardless of the options selected for the serial 2 port address.
	Serial Port 2 IR Mode	Disabled	Makes serial port 2 available to infrared applications. If Configuration Mode is set to Auto, this field cannot be edited.
	Parallel Port Address	LPT1, 378H, IRQ7	Selects the address and IRQ of the parallel port. The options are: •Disabled •LPT3,3BCH,IRQ7 •LPT1,378H,IRQ7 •LPT1,378H,IRQ5 •LPT2,278H,IRQ5 If the Configuration Mode is set to Auto, the Setup program assigns LPT1,378H,IRQ7 as the parallel port regardless of the option selected for parallel port address.
	Parallel Port Mode	Compatible	Selects the mode for the parallel port. The options are Compatible, Bi-Directional, EPP, and ECP. Compatible specifies an AT-compatible mode. Bi-Directional means the parallel port operates in the bi-directional PS/2 compatible mode. EPP and ECP specify high speed, bi-directional operation. •Compatible •Bi-directional •EPP •ECP Compatible specifies an AT-compatible mode. Bi-Directional means the parallel port operates in the bi-directional PS/2 compatible mode. EPP and ECP specify high speed, bi-directional operation.
Advanced Chip Set Configuration	Base Memory Size	640KB	Sets the size of the base memory. The options are: •512 KB •640 KB
	ISA LFB Size	Disabled	Sets the size of the linear frame buffer. The options are: •Disabled •1 MB If 1 MB is selected, the ISA LFB Base Address field will appear.
	ISA LFB Base Address		Shows the size of the Linear Frame Buffer (read only). This field will not appear if the ISA LFB Size is set to disabled.
	Video Palette Snoop	Disabled	Enables or disables the ability of a primary PCI graphics controller to share a common palette with an ISA add-in video card.
	Latency Timer (PCI Clocks)	Auto Configured	Sets the length of time an agent on the PCI bus can hold the bus when another agent has requested the bus. Valid numbers are between 0 and 256.
	Memory Error Detection	Parity	Provides memory error detection capability of information in the SIMMs.
	Bank 0 SIMM Detected		Displays the type of memory in the bank 0 SIMM slots (read only).
	Bank 1 SIMM Detected		Displays the type of memory in the bank 1 SIMM slots (read only).

Advanced Menu Options	Sub Menu Options	AB Default	Description
Power Management Configuration	Advanced Power Management	Disabled	Enables or disables the Advanced Power Management (APM) in BIOS. If disabled, none of the fields in the APM subscreen are displayed.
	IDE Drive Power Down	Enabled	Enables or disables the IDE drives to power down when the system goes into a power managed mode.
	Inactivity Timer	10 minutes	Sets how long the system must be inactive before it enters the power managed mode. The range is 0 to 255 minutes.
	Hot Key		Sets the hot key that, when pressed while holding down the <Ctrl> and <Alt> keys, causes the system to enter the power managed mode.
Plug and Play Configuration	Configuration Mode	Use ICU	Sets how BIOS gets information about ISA cards that do not have Plug and Play capabilities. The options are: •Use Setup Utility •Use ICU (ISA Configuration Utility)
	Boot with PnP OS	Windows 95	Enables PC boot with an operating system capable of Plug and Play add-in cards. The options are: •None •Other •Windows 95
	ISA Shared Memory Size	Disabled	Enables you to "unshadow" a block in upper memory. The options are: •Disabled •16 KB •32 KB •48 KB •80 KB •96 KB If disabled, the ISA Shared Memory Address will not be visible. Shadowing is a technique that copies a block of memory from an add-in card's ROM to the same address in system memory for faster access. **Important:** This field should only be set to enabled when a non Plug and Play ISA card that requires non-ROM memory space is installed. For example LAN cards with on-board memory buffers and video capture cards with video buffer memory.
	IRQ 5, 9, 10, 11	Available	If Use Setup Utility (under Configuration Mode) is selected, this option sets the status of the IRQ. The options are: •Available •Use By ISA Card The PCI auto-configuration code looks here to see if these interrupts are available for use by a PCI add-in board. If an interrupt is available, the PCI auto-configuration can assign the interrupt used by the system. If the system contains an ISA agent that uses one of these interrupts, select used By ISA Card for that interrupt. **Note:** IRQ 3, 4, 5, and 7 may not be available for this option, depending upon the setting chosen for the COM1, COM2 and parallel ports in the Peripheral Configuration Subscreen.

Security Menu Options



Security Menu Options	AB Default	Description
User Password Is	Disabled	Displays if a User password is set (read only).
Administrative Password Is	Disabled	Displays if an Administrative password is set (read only).
Set User Password		Sets User password of up to 7 alphanumeric characters.
Set Administrative Password		Set Administrative password of up to 7 alphanumeric characters.
Unattended Start	Disabled	Controls when a security password is requested. The options are Disabled and Enabled. The User password must be entered before this option is enabled. If Enabled is selected, the system will boot but the keyboard will remain locked until the User password is entered.
Security Hot Key		Selects a hot key that locks the keyboard until a User password is entered. The Keyboard LEDs flash to indicate that the keyboard is locked. When you enter the User Password, you do not have to press the <Enter> key.

The Security screen allows you to restrict access to the Setup program by setting passwords for two different access modes:

- Administrative
- User

Administrative mode has full access to the Setup program. User mode allows limited access to these setup options:

- system date and time change
- power management hot key
- user password change
- security hot key
- unattended start

You can set separate Administrative and User passwords, to limit who can change critical setup values. The limitations depend on whether either the Administrative or User passwords, or both are set.

To limit boot-up access to the system, set the User password. The system asks for this password before booting. If only the Administrative password is set, the system boots without requesting a password. If both passwords are set, you can enter either password to boot the system.

User / Administrative Password Functions

The following table summarizes the password functions.

Password Set	Administrative Mode Can:	User Mode Can:	Password Required During Boot Process?
Neither Password Set	Change All Options①	Change All Options①	None
Administrative Only Password	Change All Options	Change a Limited Number of Options	None
User Only Password	Not Applicable	Change All Options	User
Both Passwords Set	Change All Options	Change a Limited Number of Options	Administrative or User

① If no password is set, any user can change all setup options.

Technical Data

Memory Map

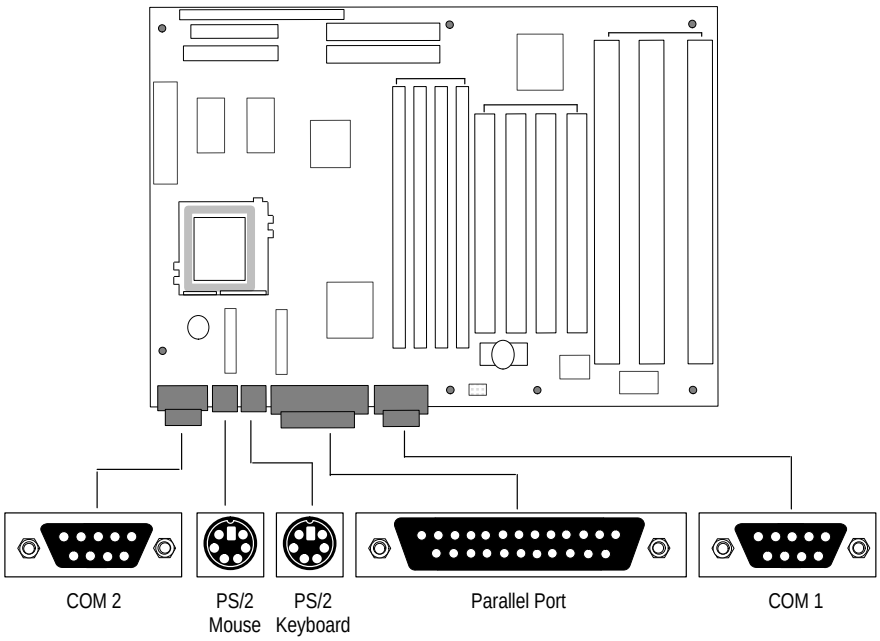
Address Range (Decimal)	Address Range Hex	Size	Description
960K-131072K	100000-8000000	127.25M	Extended Memory
944K-959K	FE000-FFFFF	8K	Boot Block (erasable only if jumpered)
936K-943K	FD000-FDFFF	4K	ESCD (Plug and Play configuration area)
928K-935K	FC000-FCFFF	4K	Reserved Data Area
896K-927K	E0000-FBFFF	112K	AMI System BIOS
800-895K	C8000-DFFFF	96K	Available HI DOS memory (open to ISA and PCI bus)
640K-799K	A0000-C7FFF	160K	Off-board video memory and BIOS
639K	9FC00-9FFFF	1K	Extended BIOS Data (moveable by GEMM, 386MAX)
512K-638K	80000-9FBFF	127K	Extended Conventional
0K-511K	00000-7FFFF	512K	Conventional

Board Interrupts

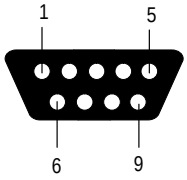
IRQ	System Resource
NMI	I/O Channel Check
0	Reserved, Interval Timer
1	Reserved, Keyboard Buffer Full
2	Reserved, Cascade Interrupt from Slave PIC
3	Serial Port 2
4	Serial Port 1
5	Parallel Port 1 (PNP0 option)
6	Floppy
7	Parallel Port 1
8	Real Time Clock
9	User Available
10	User Available
11	User Available
12	Onboard Mouse Port, if present, or user available
13	Reserved, Math Coprocessor
14	Primary IDE, if present, or user available
15	Secondary IDE, if present, or user available

Processor Board Connectors

I/O Connectors

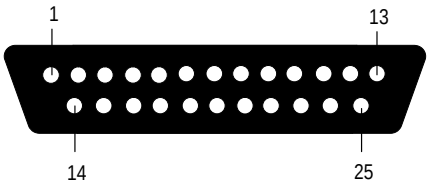


Serial Port Connectors (COM1, COM2)



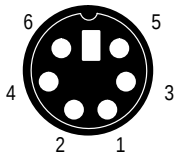
Pin #	Signal Name
1	DCD
2	Serial In
3	Serial Out
4	Data Terminal Ready (DTR)
5	GND
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	RI

Parallel Port Connector



Pin #	Signal Name	Pin #	Signal Name
1	Strobe #	14	Auto Feed #
2	Data Bit 0	15	Fault #
3	Data Bit 1	16	INIT #
4	Data Bit 2	17	SLCT IN#
5	Data Bit 3	18	Ground
6	Data Bit 4	19	Ground
7	Data Bit 5	20	Ground
8	Data Bit 6	21	Ground
9	Data Bit 7	22	Ground
10	Ack #	23	Ground
11	Busy	24	Ground
12	Error	25	Ground
13	Select		

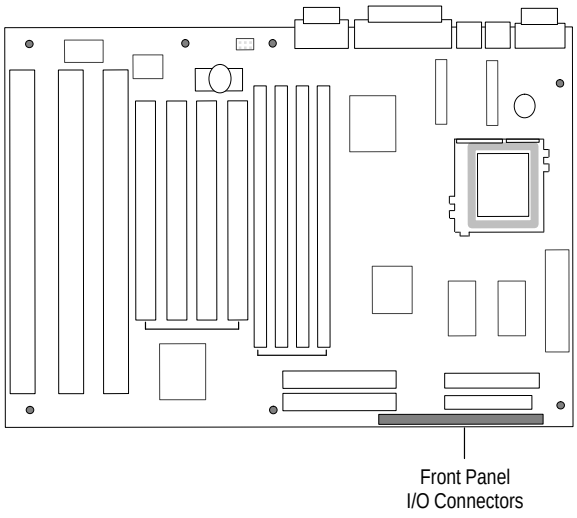
Keyboard and Mouse Connectors



Pin #	Signal Name
1	Data
2	No Connection
3	Ground
4	+5 V (fused)
5	Clock
6	No Connection

Note: You can plug the mouse and keyboard into either of the PS/2 style connectors. The system automatically detects the presence of the keyboard and mouse at boot up.

Front Panel I/O Connectors



Speaker Connector

Pin #	Signal Name	Wire Color
1	SPKR_DATA#	Black
2	On-board speaker	
3	No connect	
4	+5V Vcc	Red

Infrared Connector

Pin #	Signal Name
1	No Connect
2	IRTX
3	Ground
4	IRRX
5	No connect
6	+5 V

SLEEP PWR Connector

Hard Drive LED Connector

Pin #	Signal Name
1	+5 V
2	No connect
3	HD ACTIVE#
4	+5 V

Power LED

Pin #	Signal Name	Wire Color
1	No connect	
2	LED-PWR	Green
3	No connect	
4	Ground	
5	No connect	Blue

Reset Connector

Pin #	Signal Name
1	Reset#
2	Ground

Fan Connector

Pin #	Signal Name
1	Ground
2	+12 V
3	No connect

System *BIOS Messages*

BIOS Beep Codes

The following beep codes may be heard while the Setup program saves changes to CMOS RAM.

Beeps	Indicates:	Description
1	Refresh Failure	Memory refresh circuitry on the baseboard is faulty.
2	Parity Error	Will not occur (parity is not supported)
3	Base 64 KB Memory Failure	Memory failure in the 1st 64 KB.
4	Timer Not Operational	Memory failure in the 1st 64 KB of memory, or Timer 1 on the processor board is not functioning.
5	Processor Error	CPU generated an error.
6	8042 - Gate A20 Failure	Keyboard controller (8042) may be faulty. The BIOS cannot switch to protected mode.
7	Processor Exception Interrupt Error	CPU generated an exception interrupt.
8	Display Memory Read/Write Error	Video adapter is either missing or memory is faulty. This is not a fatal error.
9	ROM Checksum Error	ROM checksum value does not match the value encoded in BIOS.
10	CMOS Shutdown Register (Read/Write Error)	Shutdown register for CMOS RAN failed.

Bootup Error Messages

The following table lists the error messages that may occur during BIOS setup or during the initial power-up sequence (Power On Self Test and device initialization.

Error Message	Explanation
8042 Gate - A20 Error	Gate A20 on the keyboard controller (8042) is not working.
Address Line Short!	Error in the address decoding circuitry.
Cache Memory Bad, Do Not Enable Cache!	Cache memory is defective.
CH-2 Timer Error	There is an error in Timer 2.
CMOS Battery State Low	CMOS RAM is protected by a battery. Replace the battery, see Publication 6180-6.0.
CMOS Checksum Failure	After CMOS RAM is saved, a checksum is generated. The previous checksum value is different from the current value. Run BIOS Setup.
CMOS System Options Not Set	The values stored in CMOS RAM are either corrupt or nonexistent. Run BIOS Setup.
CMOS Display Mismatch	The video type in CMOS RAM does not match the type detected by the BIOS. Run BIOS setup.
CMOS Time and Date Not Set	Run BIOS Setup to set the date and time.
Diskette Boot Failure	The boot disk in the floppy drive i corrupt. Use another boot diskette.
DMA Error	Error in the DMA controller.
DMA #1 Error	Error in the 1st DMA channel.
DMA #2 Error	Error in the 2nd DMA channel.
FDD Controller Failure	BIOS cannot communicate with the floppy drive controller. Check all connections (with power off).
HDD Controller Failure	BIOS cannot communicate with the hard disk drive controller. Check all connections (with power off).
INTR #1 Error	Interrupt channel 1 failed POST.
INTR #2 Error	Interrupt channel 1 failed POST.
Invalid Boot Diskette	BIOS can read floppy diskette but cannot boot the system. Try a different boot diskette.
Keyboard is Locked . . . Unlock It	The keyboard lock is engaged. The system must be unlocked to continue.
Keyboard Error	Keyboard timing problem. Set the keyboard option in BIOS Setup to Not Installed to skip keyboard POST routines. ///where???
KB/Interface Error	There is an error in the keyboard connector.
Off Board Parity Error (DS4)	Parity error in memory installed in the expansion slot. The format is: OFF BOARD PARITY ERROR ADDR (HEX) = XXXX where XXXX is the address of the error.
Parity Error ????(DS5)	Parity error in system memory at an unknown address.

PCI Information and Error Messages

The following table list the error messages that may occur with devices installed in the PCI card slots.

Message	Meaning
Bad PnP Serial ID Checksum	The Serial ID checksum of a Plug and Play card was invalid.
Floppy Disk Controller Resource Conflict	The floppy diskette controller has requested a resource that is already in use.
NVRAM Checksum Error, NVRAM Cleared	The ESCD data was reinitialized because of an NVRAM checksum error. Try rerunning the ICU.
NVRAM Cleared By Jumper	The Clear CMOS jumper has been moved to the Clear position and CMS RAM has been cleared.
NVRAM Data Invalid, NVRAM Cleared	Invalid entry in ESCD.
Parallel Port Resource Conflict	The parallel port has requested a resource that is already in use.
PCI Error Log is Full	This message is displayed when more than 15 PCI conflict errors are detected. No additional PCI errors can be logged.
PCI I/O Port Conflict	Two devices requested the same resource, resulting in a conflict.
PCI IRQ Conflict	Two devices requested the same resource, resulting in a conflict.
PCI Memory Conflict	Two devices requested the same resource, resulting in a conflict.
Prime Boot Device Not Found	The specified primary boot device (hard disk drive, diskette drive, or CD-ROM drive) could not be found.
Primary IDE Controller Resource Conflict	The primary IDE controller has requested a resource that is already in use.
Primary Input Device Not Found	The specified primary input device (keyboard, mouse, or other, if input is redirected) could not be found.
Secondary IDE Controller Resource Conflict	The secondary IDE controller has requested a resource that is already in use.
Serial Port 1 Resource Conflict	Serial port has requested a resource that is already in use.
Serial Port 2 Resource Conflict	Serial port 2 has requested a resource that is already in use.
Static Device Resource Conflict	A non Plug and Play ISA card has requested a resource that is already in use.

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