digital

**MCS
LOGISTICS
ENGINEERING**

Service
Maintenance
Manual

CELEBRIS Pentium PC

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NIJMEGEN
THE NETHERLANDS

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Preface

The Digital CELEBRIS Pentium Service Maintenance Manual is a troubleshooting guide that can be used for reference when servicing the CELEBRIS Pentium line of PC's.
Digital Equipment Corporation reserves the right to make changes to the Digital CELEBRIS Pentium series without notice. Accordingly, the diagrams and procedures in this document may not apply to the computer(s) to be serviced since many of the diagnostic tests are designed to test more than one product.

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CAUTION
Digital recommends that only A+ certified engineers attempt to repair this equipment. All troubleshooting and repair procedures are detailed to support subassembly/module level exchange. Because of the complexity of the indivual boards and subassemblies, no one should attempt to make repairs at component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard. Any indications of component replacement or printed wiring board modifications may void warranty or exchange allowances.

Chapter 1   Product Description

Product Introduction

Digital CELEBRIS Pentium computers are high-performance personal computers equipped with the latest computing technology. They can be used as standalone computers , as client, or as servers in a network environment. Developed using state-of-the-art technology, these computers are the most value-packed desktop computers in their class. The following models are currently available:

♦   CELEBRIS 560 low-profile enclosure with 60 MHz Pentium
♦   CELEBRIS 575 low-profile enclosure with 75 MHz Pentium
♦   CELEBRIS 590 low-profile enclosure with 90 MHz Pentium
♦   CELEBRIS 590 FP full profile enclosure with 90 MHz Pentium
♦   CELEBRIS 5100 low-profile enclosure with 100 MHz Pentium
♦   CELEBRIS 5100 FP full-profile enclosure with 100 MHz Pentium

Significant features include:

♦   PCI local bus technology
♦   ZIF (Zero Insertion Force) socket 2 x ZIF 4 and 5
♦   8MB system RAM, expandable to 128 MB
♦   4 SIMM sockets for memory upgrade
♦   256KB external Cache up to 512KB
♦   Plug and Play
♦   On-board FDU controller
♦   On-board Enhanced local bus IDE up to four devices
♦   One PCI, One ISA, one PCI/ISA interleaved, Full Profile models have 2 more ISA slots
♦   Advanced PCI S3 864 video controller, 1MB DRAM upgradable to 2MB
♦   Flash BIOS
♦   Screwless design
♦   "Energy Star" compliant (30 Watt or less EPA requirement)

Product Models Information

EC = English, French, German, Italian and Spanish.
ED = Danish, Dutch, English, Finnish, French (France excluded), Norwegian and Swedish.

CELEBRIS Pentium Models

Product	Model	FDD	HDD	Memory	Cache	Options
CELEBRIS 560	FR-830WW-AC	1.44MB	-	8MB	256KB	
	FR-830E*-WB	1.44MB	270MB	8MB	256KB	
	FR-830E*-WC	1.44MB	540MB	8MB	256KB	
CELEBRIS 590	FR-832WW-AC	1.44MB	-	8MB	256KB	
	FR-832E*-WB	1.44MB	270MB	8MB	256KB	
	FR-832E*-WC	1.44MB	540MB	8MB	256KB	
	FR-832E*-WD	1.44MB	840MB	16MB	256KB	
CELEBRIS 575	FR-833WW-AC	1.44MB	-	8MB	256KB	
	FR-833E*-WB	1.44MB	270MB	8MB	256KB	
	FR-833E*-WC	1.44MB	540MB	8MB	256KB	
	FR-833E*-WD	1.44MB	540MB	16MB	256KB	
CELEBRIS 590FP	FR-842WW-AC	1.44MB	-	8MB	256KB	
	FR-842E*-WB	1.44MB	270MB	8MB	256KB	
	FR-842E*-WC	1.44MB	540MB	8MB	256KB	
	FR-842E*-WD	1.44MB	540MB	16MB	256KB	
CELEBRIS 5100	FR-834WW-AC	1.44MB	-	8MB	256KB	
	FR-834E*-WD	1.44MB	540MB	16MB	256KB	
CELEBRIS 5100FP	FR-844WW-AC	1.44MB	-	16MB	256KB	
	FR-844E*-WD	1.44MB	5400MB	16MB	256KB	

Chapter 2   System Utilities & Configuration

System Utilities

This chapter describes how to use the utilities and video drivers supplied with the CELEBIS Pentium computer. In most cases, these utilities and drivers have been factory installed as image files on the hard disk drive. However, before attempting to use any of the utilities or install any of the video drivers, first copy all image files onto diskettes using the Create Installation Diskettes tool in *Getting Started*. Afterwards, use these diskettes to run any of the utility programs and/or to install drivers.

When utilities and video driver diskettes have been purchased, refer to the supplied MS-DOS/Windows documentation for information on creating back-up diskettes.

System utilities consist of the following:

♦   PHLASH.EXE − enables to upgrade or restore the computer's BIOS via Flash ROM.
♦   EPP3SMC.EXE − enables to configure the computer for EPP operation.
♦   Logitech mouse drivers − enables the computer to operate using a Logitech mouse.
♦   VGA utilities and DOS video drivers consisting of:
    ◊   SMTR.EXE − enables to select the monitor type that matches the monitor's available resolution and refresh rates.
    ◊   SMODE.EXE - enables to emulate or display non-standard VGA modes.
    ◊   DOS and CAD application video drivers− provide installation instructions and, where applicable, the usage and performance tips for several S3 Trio 32 (86C732-P) video drivers.
    ◊   README.TXT - contains information on the display drivers and instructions for configuring the computer to operate with a high resolution monitor.
    ◊   Windows 3.x video drivers:
        These files consist of S3 Trio 32 (86C732-P) video drivers.

Before Using System Utilities and Video Drivers

When unfamiliar with utility programs, video drivers, and their uses, carefully read and understand this chapter before attempting to use any of the utilities or installing video drivers.

PHLASH.EXE

All computers have BIOS software in a read-only, non-volatile memory (ROM) chip. This BIOS initializes hardware and boots the operating system when the computer is turned on. The BIOS also provides access to other services such as keyboard and disk drives.

The computer comes equipped with flash memory. This means the computer's BIOS can be restored simply by running the PHLASH.EXE utility contained on the supplied System Utilities diskette. The computer's BIOS can also be upgraded to future releases by running PHLASH.EXE along with any flash BIOS update diskette if necessary.

> **CAUTION**
> **When not familiar with utility programs and their uses, carefully read and understand all of the listed topics before attempting to use PHLASH.EXE.**

Have the following items available:

♦   Blank 3½-inch 1.44 MB formatted diskette
♦   Diskette copy of the system utilities

Creating a Crisis Recovery Diskette

A crisis recovery diskette should always be prepared before attempting to upgrade the BIOS. This diskette is used to reprogram the BIOS in case the flash process fails. To create a crisis recovery diskette:

1)   Turn on the computer and allow the POST to complete. If POST detects an error refer to *"Troubleshooting"* and take the appropriate steps to correct the problem. After the problem has been resolved, restart the computer.
2)   Insert the system utilities diskette that have been created from Getting Started and make sure the following files are in the UPGRADE directory:

> MINIDOS.SYS
> PHLASH.EXE
> DEVTBLS.DAT
> PHLASH.INI
> CELEBRIS.ROM
> MAKEBOOT.EXE
> MAKECRD.EXE

NOTE   This diskette also contains multilingual BIOS files that can be used to change the language type in Setup.

3)   Create the same directory on the hard disk drive and then copy the above files to it.
4)   Insert a blank formatted diskette into drive A.
5)   On drive A, make a directory for the files previously copied.
6)   From drive C: type *MAKECRD*. This copies the files to drive A.
7)   Remove the crisis recovery diskette from drive A and store it in a safe place.

Using the Crisis Recovery Diskette

The crisis recovery diskette must be used only if the computer's BIOS fails or if a BIOS upgrade was unsuccessful.

♦   POST detects an error after a normal boot cycle or a BIOS upgrade.
♦   The BIOS in the bootblock memory executes.
♦   The computer beeps several times.
♦   The diskette drive begins searching for the crisis recovery diskette.

If the computer's BIOS fails:

1)   Set the recovery jumper **(J25)** to enabled.
2)   Insert the crisis recovery diskette into drive A and power on the computer.
3)   After the BIOS is restarted, turn off the power and remove the crisis recovery diskette from drive A.
4)   Turn the power back on for normal operation.

Upgrading the computer BIOS

These utilities and video drivers enable to upgrade or restore the computer's BIOS and take full advantage of its enhanced video features.

NOTE	If this is the first time using these utility programs and/or video drivers it is recommended to follow the procedures in the order given.

1)   Turn on or reboot the computer. If POST detects an error, refer to *"Troubleshooting"* for possible causes and suggested solutions.
2)   If necessary, run PHLASH.EXE to upgrade or restore the computer's BIOS.
3)   Run EPP3SMC.EXE to configure the computer for EPP operation.
4)   Run SMTR.EXE to select the monitor type that matches the monitor's available resolution and refresh rates.
5)   If necessary, run SMODE.EXE to emulate or display a non-standard VGA mode.
6)   Install any applicable DOS or CAD application drivers.
7)   Install any Windows 3.x video drivers.

Perform the following steps to update the computer's BIOS in flash memory:

1)   Turn on the computer and allow the POST to complete. If the POST detects an error refer to *"Troubleshooting"* and take the appropriate steps to correct the problem. After the problem has been resolved, restart the computer.
2)   Create a crisis recovery diskette if not already done so.
      Refer to *"Creating a Crisis Recovery Diskette"*.
3)   Insert the system utilities diskette.
4)   At the MS-DOS prompt, enter the following commands (press **[Enter]** after each command):
                      a:
                      cd\UPGRADE
                      PHLASH /e
      A screen appears on the monitor warning that you are about to erase the computer's BIOS.

5)   Press **[Enter]** to continue. Else, press **[Esc]** to cancel.
        Once **[Enter]** has been pressed, PHLASH.EXE automatically updates the computer's BIOS.
        After the flashing process completes, the computer automatically reboots itself so changes
        immediately take effect.
6)   Remove the system utilities diskette.

EPP3SMC.EXE

EPP3SMC.EXE can be executed as an MS-DOS command or added to the CONFIG.SYS file as a device
driver. In either case, use the BIOS Setup utility to set the parallel port to EPP mode.

Video Drivers & Utilities

The following topics describe how to use the video utilities and install video drivers on the computer:

                    SMODE.EXE
                    SMTR.EXE
                    DOS Video Drivers
                    Windows 3.x Drivers

Setting High Resolution Mode for The Monitor Display

To use the high resolution modes on the computer, perform the following steps:

1)   Use the BIOS Setup utility to set correctly the Video System option.
2)   Use SMTR.EXE from the VGA Utilities and DOS Video Drivers diskette to set correctly a Monitor
        Type.
3)   Use Windows Setup to copy the appropriate video driver into Windows.

⚠	**CAUTION** **Do not connect a low resolution monitor to a system that has been configured with high-resolution video drivers.** **High resolution drivers can damage a 640 x 480 monitor.**

SMODE.EXE

The SMODE utility allows the main logic board's video circuitry to emulate and display non-standard VGA
modes. With SMODE, you can run software applications written for the following non-VGA modes:

♦   Monochrome adapter (MDA)
♦   Color graphics adapter (CGA)
♦   Expanded graphics adapter (EGA)
♦   Hercules monochrome graphics adapter (HGC)

(left margin tab: CELEBRIS 586)

The following procedure describes how to access SMODE:

1)   Turn on or reboot the computer and allow the POST to complete.
2)   Insert the VGA Utilities and DOS Video Drivers diskette into drive A.
3)   Type **A:** then press **[Enter]**.
4)   Type **CD\UTILS** and press **[Enter]**.
5)   Run the SMODE.EXE utility following the instructions on the monitor screen.

If you want to	*Type SMODE followed by*	*Example*
Display a non-standard VGA mode	<hex mode #> VGA	SMODE 55 VGA
Emulate a non-VGA mode	Either EGA, CGA, MDA, or Hercules	SMODE MDA

NOTE   VGA modes and corresponding hexadecimal numbers are listed in the release notes supplied with the computer. SMODE MDA allows the main logic board's video circuitry to emulate a monochrome adapter

SMTR.EXE

The video controller's monitor type selection must match the monitor's available resolution and refresh rates. These monitor resolution and refresh rates are listed in the monitor's support documentation and in the SMTR.EXE utility.

CAUTION
Do not select a monitor type setting that exceeds the monitor's resolution, refresh rate (vertical synchronization), and interlace or non-interlace specifications. Refer to the monitor's support documentation for performance specifications.

To select the correct monitor type:

1)   Turn on or reboot the computer and allow POST to complete.
2)   Insert the VGA Utilities and DOS Video Drivers diskette into drive A.
3)   Type *A:* then press **[Enter]**.
4)   Type *CD\UTILS* and press **[Enter]**.
5)   Type *SMTR* and press **[Enter]**.
6)   Select the correct monitor type following the instructions on the monitor screen.
             For example, if you want to run the monitor at a resolution of 1024   768, select 1024x768@70Hz/NI.
7)   Exit the SMTR.EXE utility following the instructions on the monitor screen.

DOS Video Drivers

These files contain installation instructions and, where applicable, the usage and performance tips for various DOS and CAD applications.
Installing DOS or CAD application video drivers differ with each software application. Specific instructions are located in the README.TXT file and in the appropriate DOS or CAD application directories and files.

Windows 3.x Drivers

These files contain the available S3 Trio 32 (86C732-P) video drivers for Windows 3.x. Depending on how the computer is configured and what software applications planned to be used, it may be necessary to install one or more of these drivers to optimize the capabilities of the computer.
Before installing a video device driver, read and understand the information in any associated README file.

To install a Windows 3.x video driver, perform the following:

1) Type **CD WINDOWS** at the **C:\>** prompt, then press **[Enter]**.
   The following prompt appears: **C:\WINDOWS>**.
2) Type **SETUP** and press **[Enter]**.
   The computer displays the SETUP screen.
3) Select the Display option and press **[Enter]**.
4) Toggle through the Display option to select the appropriate Windows 3.x driver.
5) Select the desired video resolution then press **[Enter]**.
6) If the appropriate video driver resides on a separate diskette, toggle through the Display option to select Other (Requires disk provided by hardware manufacturer).
7) Insert the diskette that contains the appropriate video driver and press **[Enter]**.
8) Select the desired video resolution then press **[Enter]**.

NOTE	The resolution and refresh rate must be the same as the selection made using the SMTR.EXE utility. The video setup screen appears again with the S3 driver.

9) Press **[Enter]** to accept the configuration.
   The MS-DOS prompt appears when SETUP completes.
10) Type **WIN** and press **[Enter]** to start Microsoft Windows.

BIOS Setup Utility

The information listed below explains how to configure the computer using the BIOS Setup utility. If the computer was delivered with factory-installed software, it has already been configured.
When familiar with utility programs and their uses, refer to the material in the options table while updating the computer. Otherwise, carefully read and understand all the information in this chapter before attempting to modify the computer's configuration settings.

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Running the BIOS Setup Utility

The BIOS Setup utility enables to select and permanently store information about the computer's hardware and software in the battery-backed memory of the CMOS RAM. This information takes effect each time the computer boots and can be changed each time you run setup.

Use the BIOS Setup utility when experiencing problems with the hard disk or need to reconfigure the computer. In addition, the BIOS Setup utility might need to be used to modify the configuration after adding or removing hardware, or after changing computer settings.

To run the BIOS Setup utility:

1) Turn on the computer and allow POST to complete.
2) Make a note of any configuration errors listed, and then press **[F2]** to display the main menu.
3) Follow the instructions on screen and any on-line help pop-up screens to configure the computer.

Helpful Hints

♦ Several keyboard function keys and numeric keypad keys are assigned to help select menus and options, change option values, and display help information. These keys are displayed at the bottom of the main menu and from the General Help pop-up screen.
♦ Item-specific help is available anytime during the setup process and appears at the right of the setup screen each time an option is highlighted. This on-line help provides information about a highlighted option.
♦ Select *"Save Changes & Exit"* to save all Setup values.
♦ Select *"Discard Changes & Exit"* to exit Setup without recording any changes.
♦ Select *"Get Default Values"* to set all Setup options to their default values.
♦ Select *"Load Previous Changes"* to restore all CMOS values from the last session.
♦ Select *"Save Changes"* to save all selections without exiting Setup.
♦ Press **[Esc]** to exit the Setup utility.

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BIOS Setup Utility Options

Specific notes pertaining to some Setup options may be obtained by clicking on colored entries in the "Menu Field" column described below, and/or by clicking on the icons in the rightmost column.

Main Menu Options

Menu Field	Settings	Comments
System time	Current time	Displays the current time.
System date	Current date	Displays the current date.
Language	English Español Français Deutsch Italiano	The system utilities diskette contains all the languages listed as possible settings. Use the PHLASH.EXE program and the desired language BIOS file to load a different language. The BIOS Setup utility choices are English and one other language. For example, English and French, English and German, depending on the language kit that has been ordered.
Diskette A / Diskette B	1.44 MB, 3½ 2.88 MB, 3½ Not Installed 360 KB, 5¼ 1.2 MB, 5¼ 720 KB, 3½	Sets the size and density of diskette drives.
Video system	EGA / VGA CGA 80x25 Monochrome	Sets the video controller type.
System memory	Not user selectable	Displays the amount of base (conventional) memory each time the computer boots.
Extended memory	Not user selectable	Displays the amount of extended memory each time the computer boots.

Boot Options

Menu Fields	Settings	Comments
Boot sequence	A: then C: C: then A: C: only	Each time the computer boots, it will load the operating system from the selected sequence.
SETUP prompt	Enabled Disabled	Enables or disables the <F2> setup prompt each time the computer boots.
POST errors	Enabled Disabled	Enabling this options causes the computer to pause and display a setup entry or resume the boot prompt if an error occurs at boot. Disabling this option causes the computer to always attempt to boot regardless of a setup entry or error.
Floppy check	Enabled Disabled	Enabling this option causes the computer to verify the diskette type each time the computer boots. Disabling this option speeds up the boot process.

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Boot Options (continued)

Menu Fields	Settings	Comments
Summary screen	Enabled Disabled	Enabling this option causes the computer to display configuration parameters (in the form of a summary screen) during boot.

Fixed Disk Setup Options

IDE Adapter 0/1 Master/Slave

Menu Fields	Settings	Comments
Autotype fixed disk		Press **[Enter]** to detect and fill in the installed hard disk drive parameters in the remaining fields.
Type	1 to 39 User	Selecting 1 to 39 automatically fills in the remaining fields in this menu. Selecting User prompts to fill in the remaining fields with the installed hard disk drive's parameters.
Cylinders	0 to 4095	Displays the number of cylinders.
Heads	1 to 64	Displays the number of heads.
Sectors/track	0 to 63	Displays the number of sectors/tracks.
Landing zone	0 to 4095	Displays the number of cylinders specified as the landing zone for read/write heads.
Write precomp	0 to 4095 None	Displays the number of cylinders that have their write timing changed.
Multi-sector transfers	4 blocks 8 blocks 16 blocks 32 blocks Auto	Determines the number of sectors per block for multiple sector transfers. Auto refers to the size of the disk returns when queried.
LBA control mode	Disabled Enabled	Enables or disables the LBA hard disk drive addressing option.
32 bit I/O	Disabled Enabled	Enables or disables the 32-bit hard disk drive data transfer option.
Transfer mode	Fast PIO3 Standard Fast PIO1 Fast PIO2	Selects the method of data transfer to and from the hard disk drive. Autotype the hard disk drive to select the optimum transfer mode.

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Keyboard Features

Menu Fields	Settings	Comments
Numlock	Auto On Off	Turns Numlock on or off each time the computer boots.
Key click	Disabled Enabled	Enables or disables the audible key click feature.
Keyboard auto-repeat rate	30/sec, 2/sec 6/sec, 10/sec 13.3/sec 21.8/sec 26.7/sec	Sets the number of times a second to repeat a keystroke while holding the key down.
Keyboard auto-repeat delay	1/2 sec, 3/4 sec 1 sec, 1/4 sec	Sets the delay time after a key is held down before it begins to repeat a keystroke.

Memory and Cache Options

Menu Fields	Settings	Comments
Internal cache	Enabled Disabled	Enables or disables the computer's internal cache.
External cache	Disabled Enabled	Enables or disables the computer's external cache.
System shadow	Enabled Disabled	Enables or disables the computer's BIOS shadowing option.
Video shadow	Enabled Disabled	Enables or disables the computer's shadow video option.

Shadow at:
  C8000h
  CC000h
  D0000h
  D4000h
  D8000h
  DC000h
	Enabled
	Disabled
		Allows to enable or disable shadowing of individual ROM segments to increase computer performance.

AT bus space	Disabled F80000h, .5MB F00000h, 1MB	Memory hole not available, upper memory is contiguous. Sets the memory hole at address F80000 with .5 MB memory available. Sets the memory hole at address F00000 with 1 MB memory available.

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Advanced Chip Set Control

Menu Fields	*Settings*	*Comments*
Post I/O writes	Disabled Enabled	Enabling this option increases the computer's performance.
PCI slot 1/2 latency timer	Default, 8, 10, 18, 20, ..., F0 F8	Enables to set the PCI latency timer (in PCI clocks) for each PCI device.
VGA palette snoop	Enabled Disabled	Use with VGA and non-VGA compatible PCI add-in cards to inform card not to claim VGA palette writes. Use to inform VGA and non-VGA compatible add-in cards to claim VGA palette writes.

Integrated Peripherals

Menu Fields	*Settings*	*Comments*
Mouse port	Disabled Enabled	Enables or disables the mouse port.
Parallel port	Auto Disabled 3BC, IRQ 7 378, IRQ 7 278, IRQ 5	Enables or disables the onboard port at the specified address.
Parallel port mode	Compatible mode Bi-directional mode	Sets the onboard parallel port mode. Compatible mode - standard printer connection. Bi-directional mode - PS/2 compatible mode and able to receive data.
Serial port 1	Auto Disabled 3F8, IRQ 4 2F8, IRQ 3 3E8, IRQ4 2E8, IRQ3	Enables or disables onboard serial port 1 at the specified address.
Serial port 2	Auto Disabled 3F8, IRQ 4 2F8, IRQ 3 3E8, IRQ4 2E8, IRQ3	Enables or disables onboard serial port 2 at the specified address.
Diskette controller	Enabled Disabled	Enables or disables the onboard diskette controller.
Exchange diskette drives	Disabled Enabled	Enables to logically exchange physical diskette drive designations.
Diskette write protection	Disabled Enabled	Enables or disables the selected diskette drive's write protect option.
IDE adapter 0/1	Enabled Disabled	Enables or disables the onboard IDE controller.

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Large Disk Access Mode

Menu Fields	Settings	Comments
Large disk access mode	DOS Other	Select DOS when MS-DOS has been installed. Select Other when another operating system has been installed.

Power Options

Menu Fields	Settings	Comments
Power management	Enabled Disabled	Enables or disables the computer's power management options.
Monitor suspend timer	Disabled 1 min. 5 min. 10 min. 20 min. 30 min.	Allows to disable the monitor suspend feature or, after a set period of keyboard, mouse, or keyboard controller inactivity, to place the monitor in a suspend state (minimum power saving state).
Monitor off timer	Disabled 1 min. 5 min. 10 min. 20 min. 30 min.	Allows to disable the monitor off feature or, after a set period of keyboard or mouse inactivity, to place the monitor in an off state (one-half power saving state).
Hard disk suspend timer	Enabled Disabled	Allows to disable or enable the hard disk suspend timer feature or after a set period of disk drive inactivity (approximately 21 minutes), allows the hard disk drive to spin down its motor to save power.
System suspend timer	Disabled 30 min. 1 hour 1.5 hours 2 hours 3 hours 6 hours 12 hours	Allows to disable the system suspend feature or, after a set period of computer inactivity, to place the computer in a suspend state (maximum power saving state).
Quick suspend	Enabled Disabled	Enabling this option allows to put the computer in suspend mode by pressing **[Ctrl]** + **[Alt]** + **[Esc]**.

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Security Options

Menu Fields	Settings	Comments
Supervisor password is	Not user selectable	Tells whether or not the supervisor's password is enabled or disabled.
User password is	Not user selectable	Tells whether or not the user's password is enabled or disabled.
Set supervisor password	Press [Enter]	Enables to set a supervisor password.
Set user password	Press [Enter]	Enables to set a user password.
Password on boot	Enabled Disabled	Enables or disables the enter password on boot option.
Diskette access	Supervisor User	Enables to control who has access to diskette drives.
Fixed disk boot sector	Normal Write protect	Enables to write protect the boot sector on the hard disk drive.
System backup reminder	Disabled Daily Weekly Monthly	Enables or disables the system backup reminder message.
Virus check reminder	Disabled Daily Weekly Monthly	Enables or disables the virus check reminder message.

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Chapter 3   Service Procedures

Safety Requirements

WARNING

Static electricity collects on non-conductors such as paper, cloth, or plastic. A static discharge can be damaging even though you often cannot see or feel it.

The following safety precautions must be observed to insure product and personal safety and prevent damage to circuit boards and/or components:

♦   Always wear an ESD wrist strap when handling ESD sensitive material and be sure it is properly connected.
♦   Keep circuit boards and components away from non-conductors.
♦   Keep clothing away from circuit boards and components.
♦   Keep circuit boards in anti-static bags.
♦   Be cautious when AC power is exposed when working on an assembly.
♦   Always use an isolation transformer when diagnosing terminals, monitors or power supplies when AC power is applied.
♦   Be cautious of very high voltage potentials when working with monitors.

There should be an approved insulating mat (for technician's safety) in front of any workbench where monitors, terminals or power modules are being serviced when power is applied.

NOTE   Do NOT wear ESD straps when working on terminals, monitors or power supplies when AC power is applied. This is to avoid the hazard of electrical shock.

Recommended Tools

The following tools are needed for servicing Digital PC systems. Note that test equipment must be calibrated.

♦ Multimeter (4 1/2 digit)
♦ A philips screwdriver
♦ An antistatic wrist strap

Other Materials Needed

Cleaning agent should be an all purpose cleaner that is used in-house.

Special Tools Required

None.

Remedial Diagnostic Test Software

♦ *QAPLUS/fe*, PC Advanced Diagnostic Software, latest version.
> Supplier information:
> *Diagsoft, Inc.*
> *5615 Scotts Valley Drive, Suite 140*
> *Scotts Valley, California 95066, U.S.A.*
> *Voice: 1-408-438-8247*
> *Fax: 1-408-438-7113*
> *Internet: http://www.diagsoft.com* (Diagsoft, Inc. homepage)

Recommended Virus Detection and Cleanup Software

♦ *F-PROT*, Virus Detection and Cleanup Software, latest version.
> Supplier information:
>
> North America, South America, Australia and New Zealand:
> *Command Software Systems Inc.*
> *Tel: +1-407-575 3200*
> *Fax: +1-407-575 3026*

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ECO/FCO Information

BIOS Version Information

Refer to the Digital DECpc Bulletin Board Support (telephone number: **xx33 92960312**) for the latest information on BIOS upgrades.

Unlocking and Removing Cover

⚠️ **WARNING**
You might injure yourself or damage the computer if you attempt to remove the cover before unplugging ac and monitor power cords.

The computer's cover must be removed prior to installing any hardware option.

To remove the cover:

1)   Unlock cover.
2)   Lift both side locks out, then turn towards front of computer to release cover from chassis.
3)   Carefully slide cover toward front of chassis until it clears lip of front bezel.
4)   Carefully lift cover from chassis.
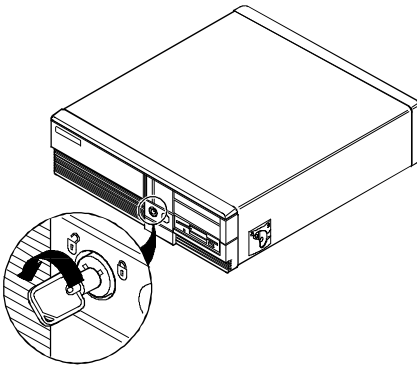
DEC00278-2

Figure 3 - 1 Unlocking the Cover
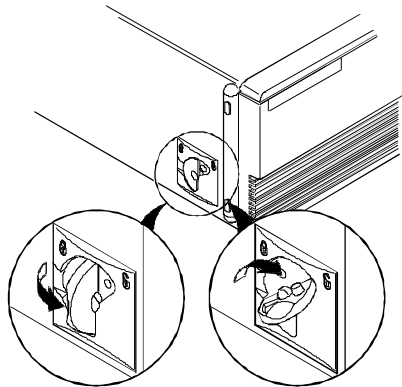
DEC00243-2

Figure 3 - 2 Release the Cover

DEC00505-2
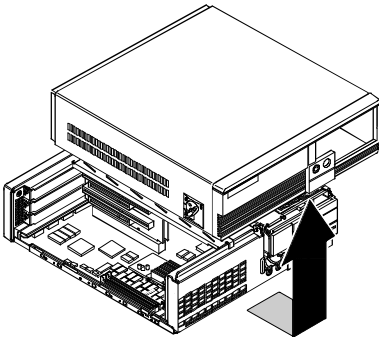
Figure 3 - 3 Removing the Cover

Computer Components

CELEBRIS Pentium Low-Profile Models

Legend	Description
A	Power supply
B	Main logic board
C	3½-inch diskette drive
D	Front access drive bay
E	Front internal drive bay
F	Riser card (two PCI & and one ISA) or (two ISA & one PCI)
G	Rear internal drive bay (under power supply)
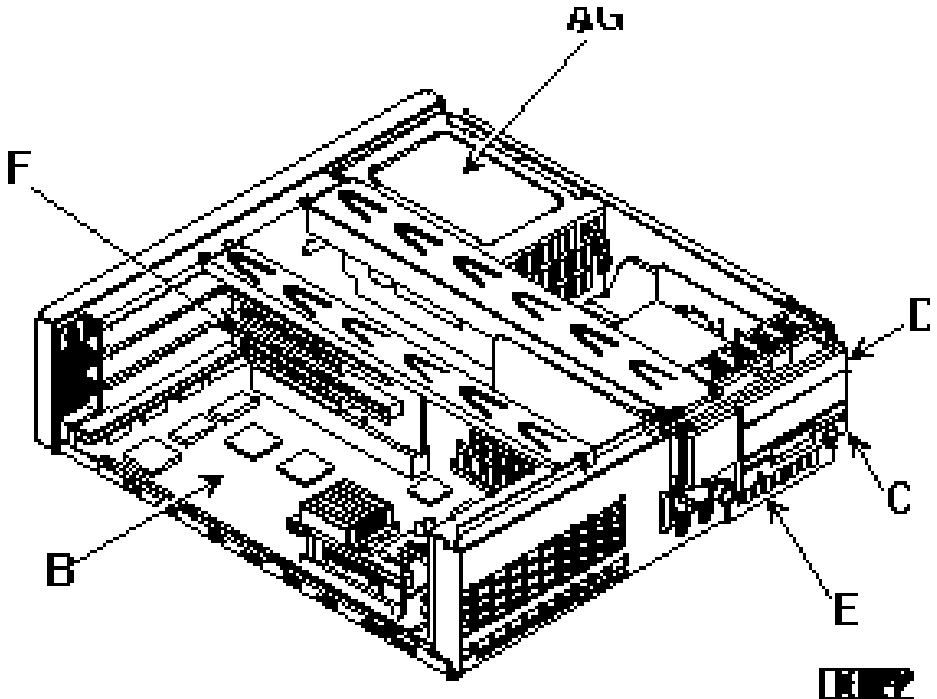
Figure 3 - 4 CELEBRIS Pentium Low-Profile models

CELEBRIS Pentium Full-Profile Models

Legend	Description
A	Power supply
B	Main logic board
C	Front access 3½-inch diskette drive
D	Front access drive bays (supports one 5¼-inch drive and one 3½-inch drive or two 5¼-inch drives)
E	Front internal drive bay
F	Riser card (supports up to five expansion boards; two PCI and three ISA or four ISA and one PCI)
G	Rear internal drive bay (under power supply)
H	Front access drive bay (supports two PCMCIA slots)
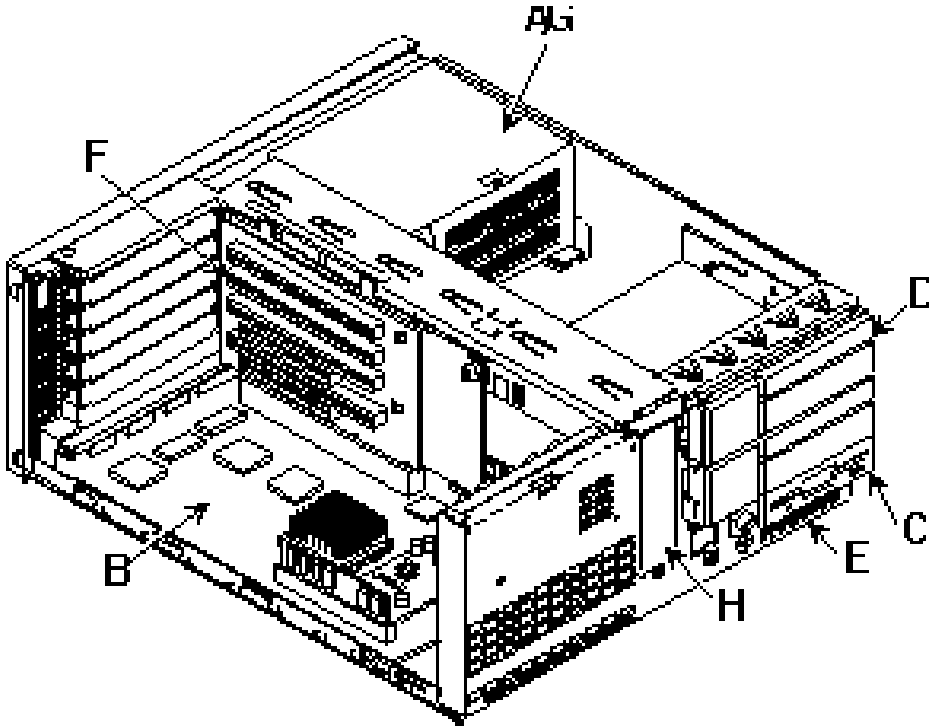
Figure 3 - 5 CELEBRIS Pentium Full-Profile models

Expansion Slots

The computer automatically assigns the necessary resources to any installed Plug and Play-compatible expansion board so it operates at maximum performance. If you plan on installing non-Plug and Play expansion boards, it may be necessary to manually set jumpers on the board based on the computer resources already allocated.

CELEBRIS Pentium Low-Profile Expansion Slots

The CELEBRIS Pentium Low-Profile computer models contain four slots for installing up to three ISA or PCI expansion boards. These four slots are located on the computer's riser card.

NOTE	Prior to installing non-Plug and Play expansion boards, run the ISA Configuration Utility (ICU) to configure the computer to avoid resource conflicts.

Expansion Slot	*Slot Type*	*Description*
J4	ISA	Supports full-length industry-standard 16-bit ISA expansion boards. Uses the top expansion slot at the rear panel.
J3	ISA	Supports full-length industry-standard 16-bit ISA expansion boards. Uses the middle expansion slot at the rear panel. Designated as a shared slot with PCI slot J2.
J2	PCI	Supports full-length 32-bit PCI local bus expansion boards. Uses the middle expansion slot at the rear panel. Designated as a shared slot with ISA slot J3.
J1	PCI	Supports half-length 32-bit PCI local bus expansion boards. Uses the bottom expansion slot at the rear panel.

NOTE	Only one expansion board can reside in slot J3 and J2 at any one time. These slots have to share the middle expansion slot opening at the rear panel

Figure 3 - 6 CELEBRIS Pentium Low-Profile Models Expansion slots

CELEBRIS Pentium Full-Profile Expansion Slots

The CELEBRIS Pentium Full-Profile computer models contains six slots for installing up to five ISA or PCI expansion boards (refer to the following Table). These four slots are located on the computer's riser card.

Expansion Slot	Slot Type	Description
J4 through J6	ISA	Supports full-length industry-standard 16-bit ISA expansion boards. Uses the top three expansion slot at the rear panel.
J3	ISA	Supports full-length industry-standard 16-bit ISA expansion boards. Uses the fourth expansion slot at the rear panel. Designated as a shared slot with PCI slot J2.
J2	PCI	Supports full-length 32-bit PCI local bus expansion boards. Uses the fourth expansion slot at the rear panel. Designated as a shared slot with ISA slot J3.
J1	PCI	Supports half-length 32-bit PCI local bus expansion boards. Uses the bottom expansion slot at the rear panel.

NOTE   Only one expansion board can reside in slot J3 and J2 at any one time. These slots have to share the middle expansion slot opening at the rear panel.
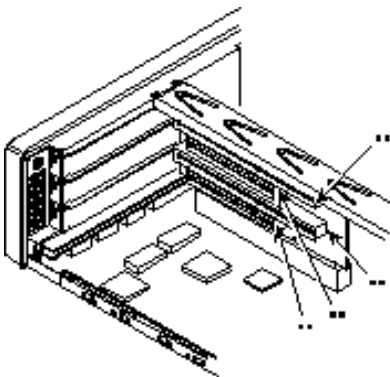

Figure 3 - 7 CELEBRIS Pentium Full-Profile Models Expansion slots

Main Logic Board Jumpers

Jumper pins allow to set specific computer parameters. They are set by changing the pin location of jumper blocks. Note that the square pin of each jumper block is pin 1. A jumper block is a small plastic-encased conductor (shorting plug) that slips over the pins. To change a jumper setting, remove the jumper from its current location. Place the jumper over the two pins designated for the desired setting. Press the jumper evenly onto the pins. Be careful not to bend the pins.

> **CAUTION**
> **Do not touch any electronic component unless you are safely grounded. Wear a grounded wrist strap or touch an exposed metal part of the system box chassis. A static discharge from your fingers can result in permanent damage to electronic components.**

CELEBRIS Pentium Main Logic Board Jumper Settings

Settings shown in **bold italics** are factory defaults.

Feature	*Description*	*Setting*
Discharge	*Normal*	*J22, pins 1 and 2 jumpered*
	Clear CMOS	J22, pins 2 and 3 jumpered
Password clear	Password clear (MFG test)	J24, jumpered
	Normal mode	*J24, open*
Recovery mode	Recovery mode	J25, jumpered
	Normal	*J25, open*
CPU clock	*60 MHz*	*J15, open*

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CELEBRIS Pentium Main Logic Board Jumper Locations
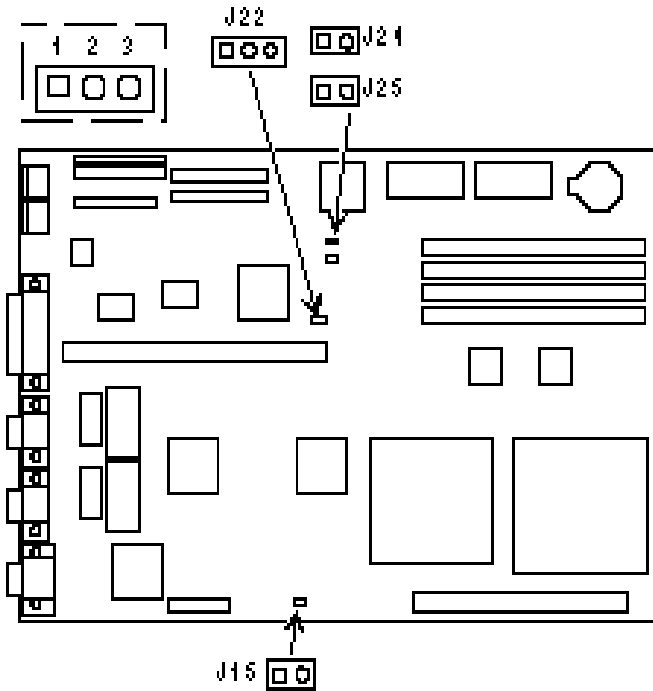
Figure 3 - 8 CELEBRIS Pentium Main Logic Board Jumper Locations

Computer Memory Configurations

Adding more memory allows the computer to run larger, more complicated software and run it faster.
The CELEBRIS Pentium computer comes with at least 8 MB of memory.
This amount can be increased up to 128 MB.

When adding additional memory make sure to:

♦   Install 36-bit SIMMs having an access time of 70 ns or less.
♦   Fill two sockets at a time using the same SIMM size, type and speed. Supported SIMM sizes: 4 MB,
     8 MB, 16 MB, and 32 MB.
♦   Fill bank 0 before bank 1 (See figure 3 - 9).

Socket 0	Socket 1	Socket 2	Socket 3	Total
4 MB				**4 MB**
8 MB				**8 MB**
4 MB	4 MB			**8 MB**
4 MB	4 MB	4 MB		**12 MB**
4 MB	4 MB	8 MB		**16 MB**
4 MB	4 MB	4 MB	4 MB	**16 MB**
8 MB	8 MB			**16 MB**
16 MB				**16 MB**
8 MB	8 MB	4 MB		**20 MB**
4 MB	4 MB	8 MB	8 MB	**24 MB**
4 MB	4 MB	16 MB		**24 MB**
8 MB	8 MB	4 MB	4 MB	**24 MB**
8 MB	8 MB	8 MB		**24 MB**
8 MB	8 MB	8 MB	8 MB	**32 MB**
8 MB	8 MB	16 MB		**32 MB**
16 MB	16 MB			**32 MB**
32 MB				**32 MB**
16 MB	16 MB	4 MB		**36 MB**
4 MB	4 MB	16 MB	16 MB	**40 MB**
4 MB	4 MB	32 MB		**40 MB**
16 MB	16 MB	4 MB	4 MB	**40 MB**
16 MB	16 MB	8 MB		**40 MB**
8 MB	8 MB	16 MB	16 MB	**48 MB**
8 MB	8 MB	32 MB		**48 MB**
16 MB	16 MB	8 MB	8 MB	**48 MB**
16 MB	16 MB	16 MB		**48 MB**
16 MB	16 MB	16 MB	16 MB	**64 MB**
16 MB	16 MB	32 MB		**64 MB**
32 MB	32 MB			**64 MB**
32 MB	32 MB	4 MB		**68 MB**

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Computer Memory Configurations (continued)

Socket 0	Socket 1	Socket 2	Socket 3	Total
4 MB	4 MB	32 MB	32 MB	**72 MB**
32 MB	32 MB	4 MB	4 MB	**72 MB**
32 MB	32 MB	8 MB		**72 MB**
8 MB	8 MB	32 MB	32 MB	**80 MB**
32 MB	32 MB	8 MB	8 MB	**80 MB**
32 MB	32 MB	16 MB		**80 MB**
16 MB	16 MB	32 MB	32 MB	**96 MB**
32 MB	32 MB	16 MB	16 MB	**96 MB**
32 MB	32 MB	32 MB		**96 MB**
32 MB	32 MB	32 MB	32 MB	**128 MB**

CELEBRIS Pentium SIMM Socket Locations

**Figure 3 - 9
CELEBRIS
Pentium SIMM
Socket Locations**

DEOHH243-5

Part Removal and Replacement

Opening the Low-Profile Device Bay & Power Supply Subassembly

Open the device bay & power supply subassembly in order to install, remove, and/or connect certain components and peripheral devices. To open the subassembly:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Unlock and remove cover.
4) Slide *front locking mechanism* to right to release subassembly.
5) Lift up on subassembly and *lock in place*.
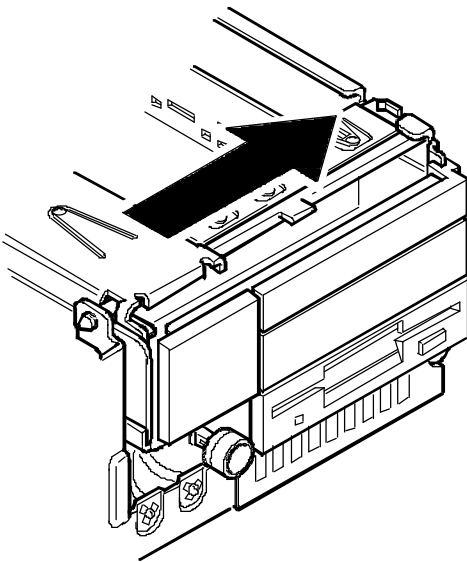
Figure 3 - 10 Release Front Locking Mechanism
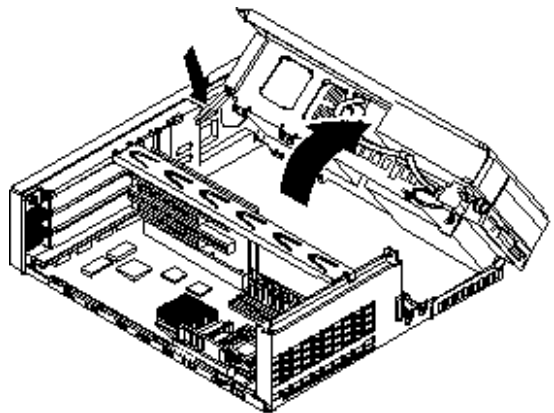
Figure 3 - 11 Lock in place

Opening the Full-Profile Device Bay & Power Supply Subassembly

Open the device bay & power supply subassembly in order to install, remove, and/or connect certain components and peripheral devices.

To open the subassembly:

1)   Turn off the computer.
2)   Disconnect external devices, ac power, and monitor power.
3)   Unlock and remove cover.
4)   Pull tab **(A)** toward front of computer to release subassembly.
5)   Lift up on subassembly and *lock in place*.
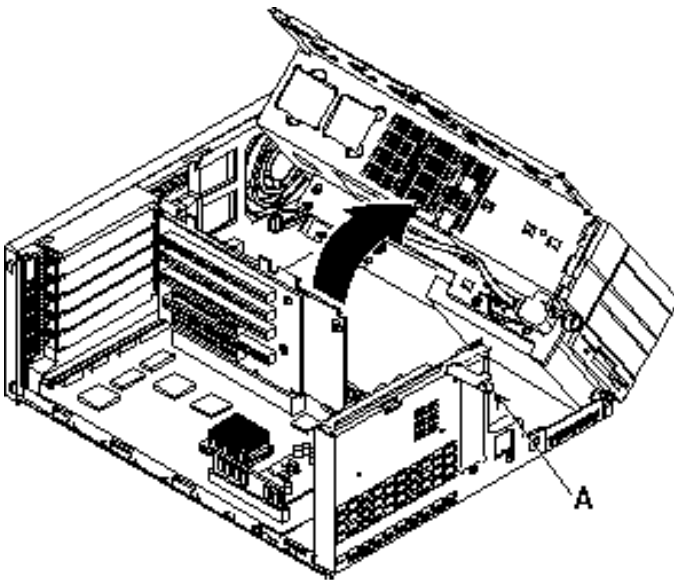
Figure 3 - 12 Opening the Full-Profile Device bay & Power Supply Assembly

Removing the 3½-Inch Diskette Drive (Low-Profile Models)

To remove the 3½-inch diskette drive:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Unlock and remove cover.
4) Remove two screws securing the right side of diskette drive to chassis.
5) Open the device bay & power supply subassembly.
   Refer to *"Opening the Device Bay & Power Supply Subassembly"*
6) Disconnect power and ribbon cables.
7) Remove two screws securing diskette drive to chassis.
8) Slide the diskette drive out of the front of the chassis.
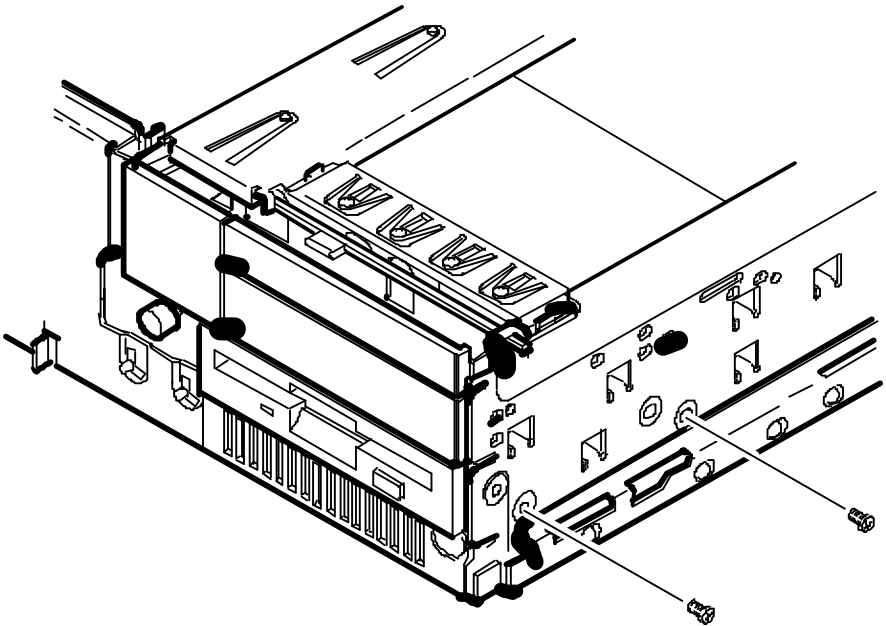
Figure 3 - 13 Removing the 3½-inch diskette drive (Low-Profile Models)

Removing the 3½-Inch Diskette Drive (Full-Profile Models)

To remove the 3½-inch diskette drive:

1)   Turn off the computer.
2)   Disconnect external devices, ac power, and monitor power.
3)   Unlock and remove cover.
4)   Remove two screws securing the right side of diskette drive to chassis.
5)   Open the device bay & power supply subassembly.
      Refer to *"Opening the Device Bay & Power Supply Subassembly"*.
6)   Disconnect power and ribbon cables.
7)   Remove two screws securing diskette drive to chassis.
8)   Slide the diskette drive out of the front of the chassis.
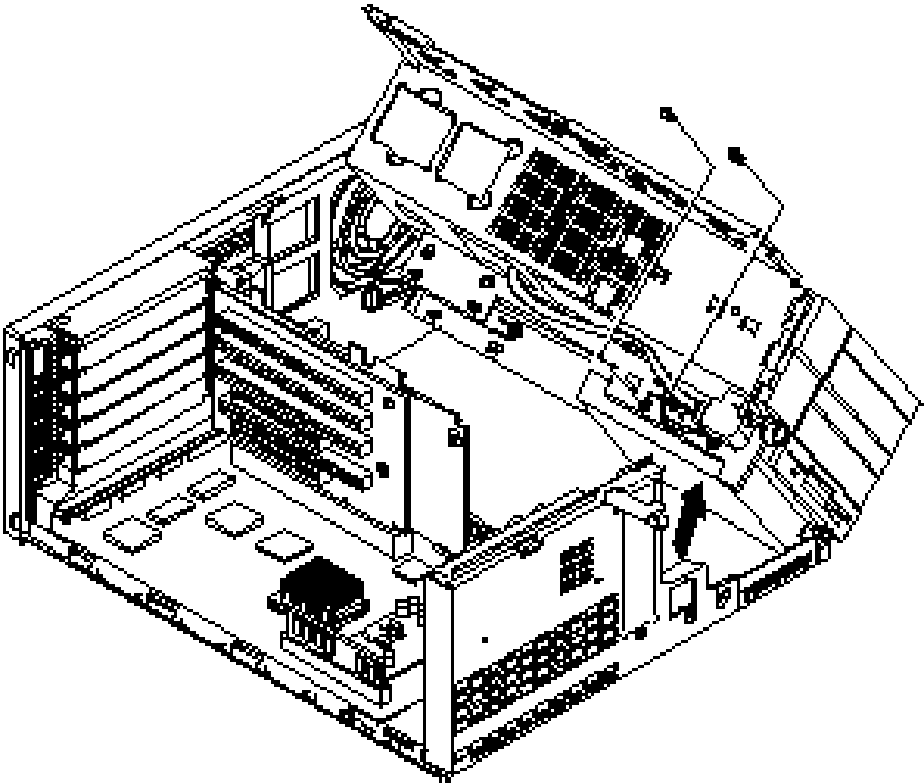
Figure 3 - 14 Removing the 3½-Inch Diskette Drive (Full-Profile Models)

Removing the Main Logic Board

To remove the Main Logic Board:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Unlock and remove cover.
4) Remove all connectors.
5) Remove all expansion boards.
6) Remove the riser card and bracket.
7) Remove screws and lift the board out.
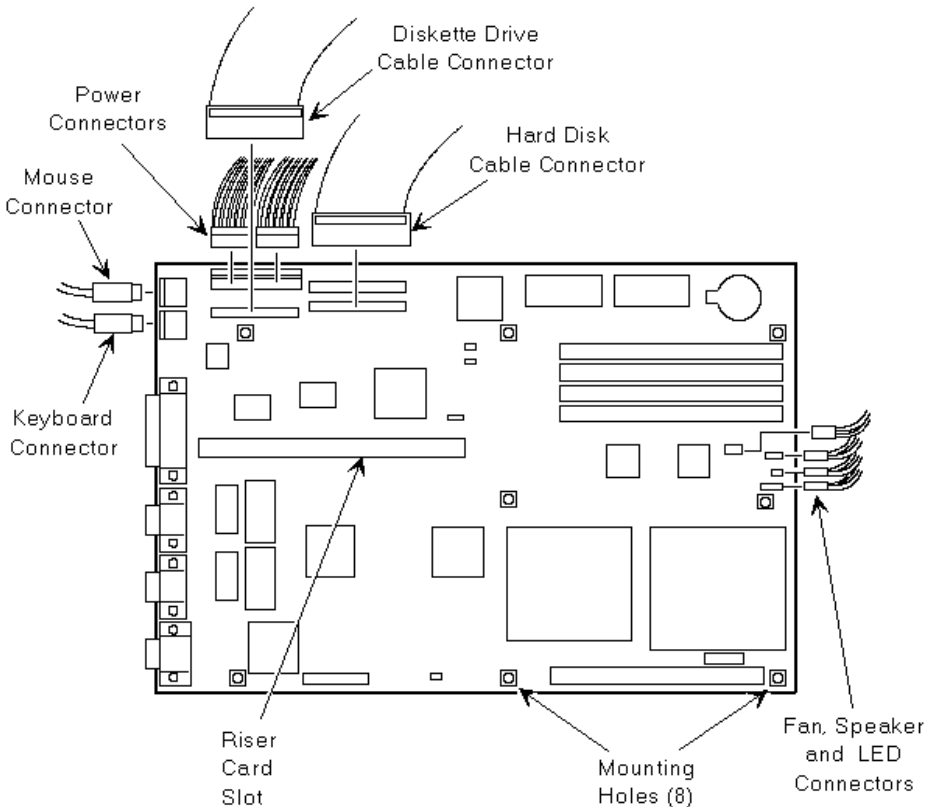
Figure 3 - 15 Removing the Mian Logic Board

Removing the Power Supply (Low-Profile Models)

To remove the power supply:

1) Perform the steps necessary to open the device bay and power supply subassembly.
2) Remove power supply, IDE, and diskette cabling from main logic board noting their proper orientation.
3) While holding the device bay and power supply subassembly, carefully release the rear latch.
4) Carefully slide entire subassembly away from chassis and place upside down on antistatic surface.
5) Loosen two screws securing power on/off switch to chassis.
6) Remove screws securing power supply to chassis.
7) Remove power supply and power on/off switch from the subassembly.

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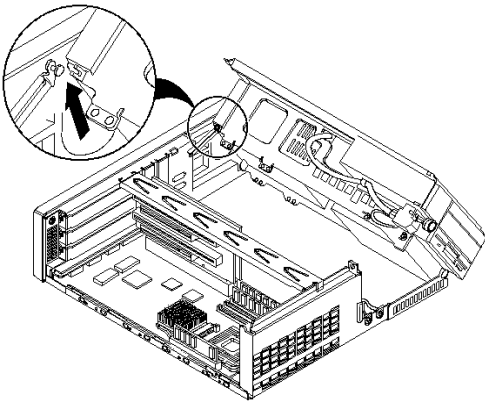
Figure 3 - 16 Releasing the Latch

Figure 3 - 17 Removing the Low-Profile Models Power Supply
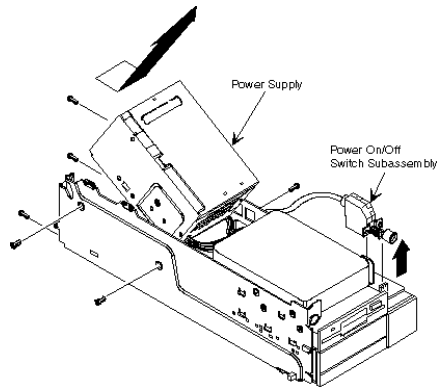
Figure 3 - 18 Removing the Full-Profile Models Power Supply
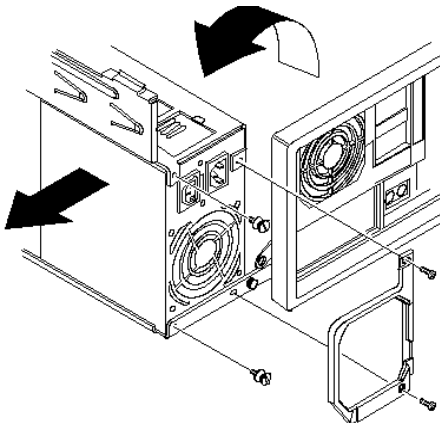
Removing the Riser Card & Bracket

To remove the riser card and bracket:

1)   Turn off the computer.
2)   Disconnect external devices, ac power, and monitor power.
3)   Unlock and remove cover.
4)   Remove all expansion boards.
5)   Carefully lift riser card and bracket from computer.
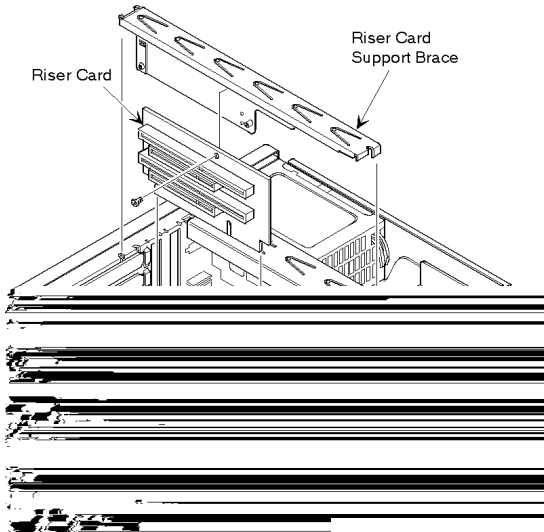
Figure 3 - 19 Removing the Riser Card & Bracket (Low-Profile Models)

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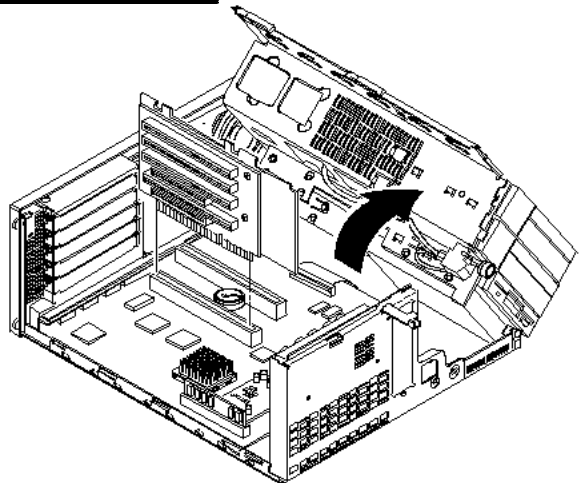
Figure 3 - 20 Removing the Riser Card & Bracket (Full-Profile Models)

Installation Procedures

Installing a Higher Performance CPU

The CELEBRIS Pentium main logic board is equipped with an Intel Pentium processor installed in a ZIF socket. A regulator card or jumper card is also required and is installed over the second ZIF socket.

NOTE   If you install a higher performance CPU, a regulator card might be required. Connect the regulator card to the power connector, align the holes in the card with the plastic inserts, and then snap into place.

Also, do not remove the external cache module. Removing the external cache module prevents the computer from operating correctly.

To install a higher performance CPU:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Unlock and remove cover.
4) Lift up on lever to release old CPU.
5) Remove old CPU.
6) Install new CPU.
7) Make sure pin 1 on CPU is aligned with pin 1 on ZIF socket (Figure 3 - 21, **A**).
8) Return release lever to its original position and then set all appropriate CPU jumpers (refer to *"Main Logic Board Jumpers"*).
9) Replace and lock cover.
10) Connect external devices and restore power.
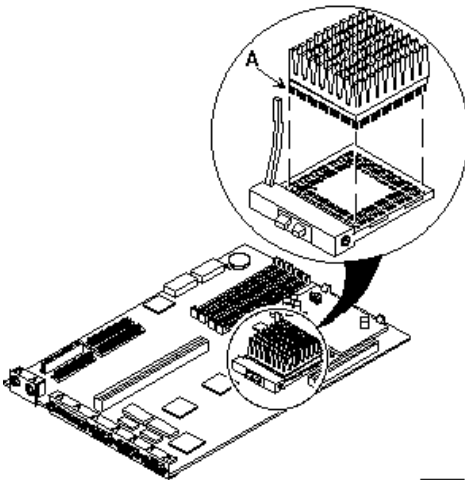
Figure 3 - 21 Installing a Higher Performance CPU

Installing External Cache Memory

CAUTION
Installing external cache memory incorrectly might cause the computer to malfunction.

The CELEBRIS Pentium computer is equipped with a 5V dc or 3.3V dc 256 KB external cache module. A 512 KB external cache module option is available to improve the performance of the installed CPU. Future CPU upgrades might also require an external cache module upgrade.

NOTE   If you install a higher performance CPU, a 3.3V dc external cache module might be required and comes with the CPU upgrade kit.

To install the cache module:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Unlock and remove cover.
4) Remove external cache from anti-static bag, and install it in socket.
5) Replace and lock cover.
6) Connect external devices and restore power.
7) If necessary, run BIOS Setup utility and enable external cache option.
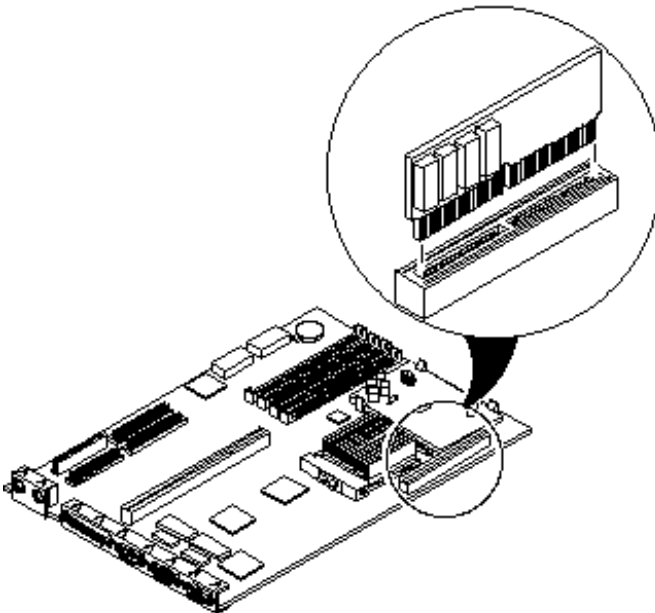
Figure 3 - 22 Installing External Cache Memory

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Installing Video Memory

The CELEBRIS Pentium computer comes standard with 1 MB of video memory. This amount can be increased to 2 MB by installing a 1 MB video memory DRAM chip in the designated socket on the main logic board.

To install the video memory upgrade chip:

1)   Turn off the computer.
2)   Disconnect external devices, ac power, and monitor power.
3)   Unlock and remove cover.
4)   Remove upgrade chip from packaging and install in socket.
5)   Replace and lock cover.
6)   Connect external devices and restore power.
7)   Reboot the computer to configure it for additional video memory.
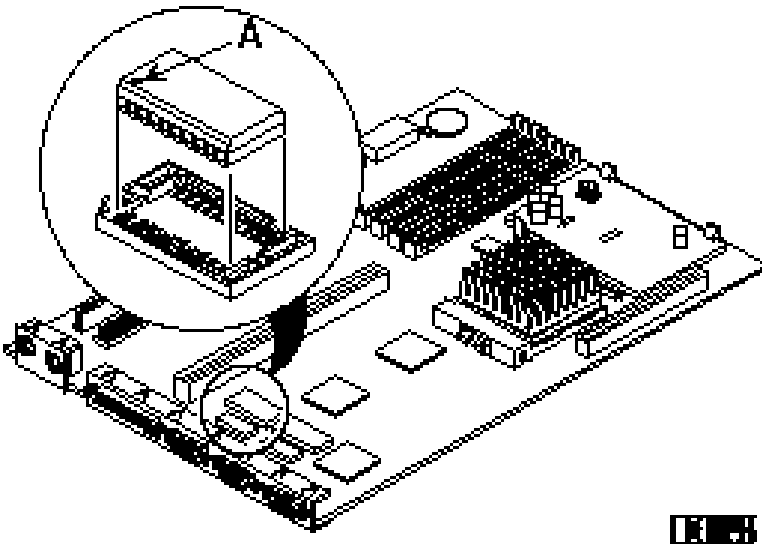
Figure 3 - 23 Installing Video Memory

Replacement Procedures

Replacing the Computer Battery

The CELEBRIS Pentium computer battery runs the computer clock and retains any setup information when it is turned off. If the computer ever fails to retain the correct date, time, or configuration settings when it is turned on, replace the computer's battery.

> **WARNING**
> **Depending on your locality, the computer's battery might be considered hazardous waste. Make sure you follow any state or local statute to properly dispose of the old battery.**

To replace the battery, perform the following:

1)   Record computer configuration settings using the BIOS Setup utility.
2)   Turn off the computer.
3)   Disconnect external devices, ac power, and monitor power.
4)   Unlock and remove cover.
5)   Carefully lift up on retaining clip and remove old battery.
6)   Install new battery.
     When installing new battery, make sure + side faces up.
7)   Replace and lock cover.
8)   Connect external devices and restore power.
9)   Run BIOS Setup utility to reconfigure computer using recorded configuration settings from step 1.
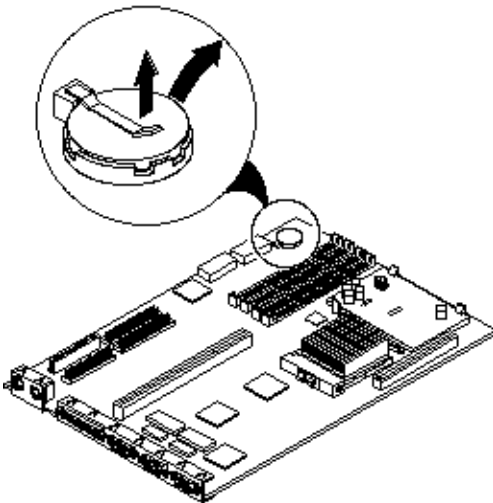
Figure 3 - 24 Replacing the computer's Battery

Connecting Diskette and IDE Devices

To connect diskette and IDE devices, perform the following:

1) Connect supplied ribbon cable to appropriate device as shown. Make sure cable is connected with correct orientation. Most cables and sockets are keyed so it is impossible to connect them backwards. If the cable or device is not keyed, connect pin 1 of cable to pin 1 of device's socket. Pin 1 of cable is on edge with colored stripe. Pin 1 of device's socket should be marked with an arrow at one end of socket. If necessary, refer to the device's documentation for pin 1 orientation.
2) Connect appropriate power cable to device.
3) Replace and lock side panel.
4) Connect external devices and restore power.
5) Run BIOS Setup Utility to configure the computer.

NOTE	If only one IDE device is installed, make sure to use the ribbon cable connector furthest from the Main Logic Board. Also, if IDE devices are installed in both internal drive bays, make sure device's control/data connectors directly face each other.

Connecting Diskette Devices

Figure Legend	*Diskette Drive Component (Figure 3-25)*
A	Power supply
B	Power connections
C	Diskette drive connections
D	Main logic board diskette drive connection
E	Diskette drives
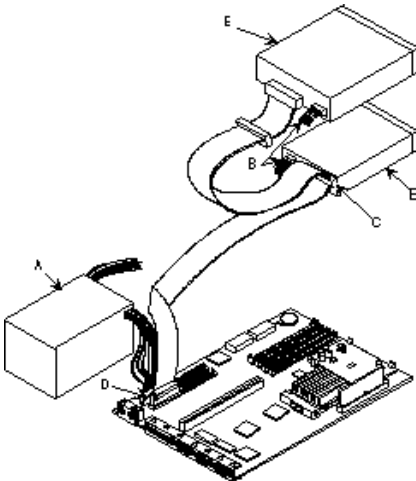
Figure 3 - 25 Diskette Drive Connection

Connecting IDE Devices

Figure Legend	IDE Drive Component (Figure 3-26)
A	Power supply
B	Power connections
C	IDE hard disk drive connections
D	Main logic board IDE drive connections
E	IDE hard disk drive
F	IDE CD-ROM drive
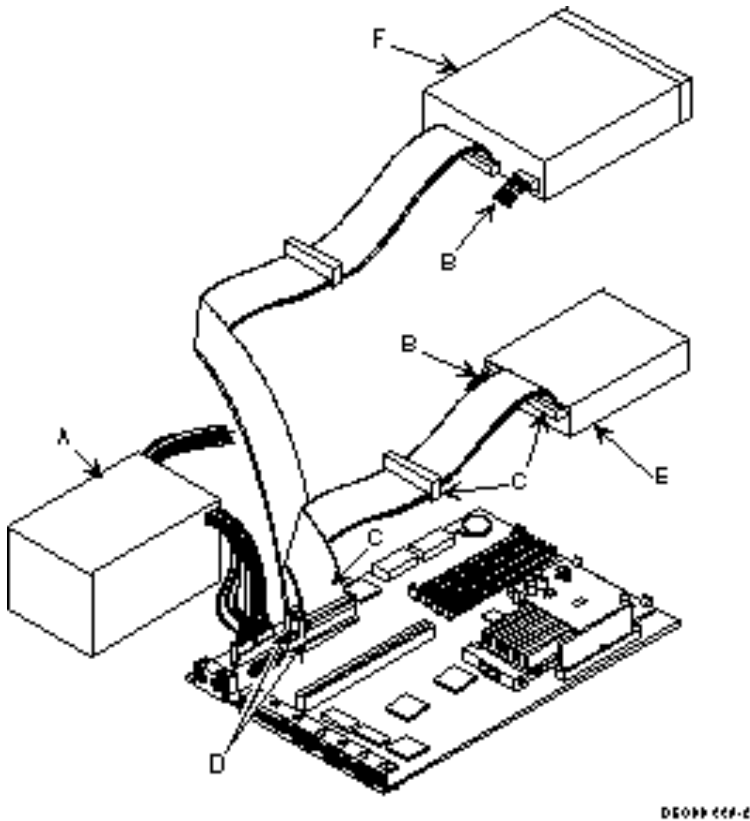
Figure 3 - 26 IDE Drive Connection

Chapter 4 Troubleshooting

The following pages provide initial troubleshooting procedures and tables listing specific problems, probable causes, and recommended actions to take if the computer fails after configuring it or after installing optional hardware or software.

Refer to the documentation supplied with additional options when experiencing problems with specific options that have been installed.

Initial Troubleshooting

Follow these general procedures to troubleshoot the Venturis 400, FP400 and 560 computer:

♦ Press **[Ctrl]** + **[Alt]** + **[Del]**. If the computer fails to boot, turn it off, wait until all hard disk drives are spun down completely, and then turn it back on.
♦ If the POST detects an error refer to *"Troubleshooting"* and take the appropriate steps to correct the problem. After the problem has been resolved, restart the computer.
♦ Run the BIOS Setup utility.
♦ Make sure all necessary changes have been made to the CONFIG.SYS and AUTOEXEC.BAT files.
♦ Make sure all necessary video, printer, and application device drivers are properly installed.
♦ Ensure that all cables and connections are secure.
♦ Run the *QAPLUS/fe* advanced diagnostic software.
♦ If these steps do not identify and/or correct the problem, perform the specific troubleshooting procedures appropriate to the circumstances.

NOTE	If you need to return a failed component, pack it in its original container and return it to Digital for service

Fill in the appropriate fields of the Part Exchange Form with the relevant error information!!

Beep Codes

When POST finds an error and cannot display a message, the computer's speaker emits a series of beeps to indicate the error. For example, video failure or configuration error is indicated by a 1 - 2 beep code (a burst of three beeps, one long beep followed by two short beeps).

The following table lists other fatal error and their associated beep codes. Each code represents the number of short beeps that are grouped together. Fatal errors (errors that lock up the computer) are generally the result of a failed main logic board or some other add-on component (SIMM, BIOS, computer battery, etc.).

BeepCode	Error Message
1-2	Video failure or configuration error
2-2-3	BIOS ROM checksum
3-1-1	Test DRAM refresh
3-1-3	Test keyboard controller
3-4-1	Test 512K base address lines
3-4-3	Test 512K base memory
2-1-2-3	Check ROM copyright notice
2-2-3-1	Test for unexpected interrupts

POST and Boot Messages

The POST displays messages to alert to errors in hardware, software, and firmware or to provide operating information about the computer.
Each time the POST displays a message on screen, the computer's speaker beeps twice. If an error occurs before the monitor is initialized, specific beep codes sound to alert to a problem. The following table lists a general grouping of system messages. In addition, each message is accompanied by text describing the message and in most cases a recommended solution to the problem.

NOTE   *Italics* indicate variable parts of a message such as memory addresses, hexadecimal values, and so on. These messages can differ at each occurrence.

Message	Description/Solution
nnnn **Cache SRAM Passed**	Where *nnnn* is the amount of computer cache (in kilobytes) that tested successfully.
Diskette drive A error **Diskette drive B error**	Run the BIOS Setup utility. Check all connections. If the problem persists, replace the faulty diskette drive.
Entering SETUP	BIOS Setup utility runs.
Extended RAM Failed at offset: *nnnn*	Extended memory failed or configured incorrectly. Make sure SIMMs are installed correctly. If the problem persists, replace SIMMs. Run the BIOS Setup utility and restore all settings to original values.
Extended RAM Passed: *nnnn*	Where *nnnn* is the amount of extended memory (in kilobytes) that tested successfully.

POST and Boot Messages (continued)

Message	*Description/Solution*
Failing Bits: *nnnn*	nnnn is a map of the bits at the RAM address which failed the memory test. Run the BIOS Setup utility and restore all to original values. If the problem persists, replace SIMMs.
Fixed Disk 0 Failure **Fixed Disk 1 Failure** **Fixed Disk Controller Failure**	Run the BIOS Setup utility. Check all connections. If the problem persists, replace the main logic board or fixed disk as necessary.
Incorrect Drive A type - run SETUP **Incorrect Drive B type - run SETUP**	Diskette drive A and/or B not correctly identified in the BIOS Setup utility. Run the BIOS Setup utility and properly identify diskette drive A and/or B.
Invalid NVRAM media type	NVRAM access failed. Run the BIOS Setup utility and restore all settings to original values. If the problem persists, replace the computer battery and/or BIOS.
Keyboard controller error **Keyboard error** **Keyboard locked - Unlock key switch**	Check the keyboard connection. If the connection is secure, the keyboard or keyboard controller might have failed. If the problem persists, replace the keyboard and/or keyboard controller.
Monitor type does not match CMOS - Run SETUP	Run the BIOS Setup utility and set the correct monitor type.
Operating system not found	The operating system cannot be found on drive A or drive C. Run the BIOS Setup utility and correctly identify drive A or drive C. Correctly install the operating system. Refer to the supplied operating system documentation.
Parity check 1 *nnnn* **Parity check 2** *nnnn*	Parity error found in the computer bus. The BIOS attempts to locate the address and displays it on the monitor screen. Run the BIOS Setup utility and restore all settings to original values. If the problem persists, replace SIMMs.
Press <F1> to resume, <F2> to Setup	This message appears after any recoverable error message. Press <F1> to reboot or <F2> to enter the BIOS Setup utility to make any necessary changes.
Real time clock error	Real-time clock failed BIOS test. Replace battery and then run the BIOS Setup utility to restore previous configuration information.
Shadow RAM Failed at offset: *nnnn*	Shadow RAM failed. Run the BIOS Setup utility and disable failed shadow memory region.
nnnn **Shadow RAM passed**	Where *nnnn* is the amount of shadow RAM (in kilobytes) that tested successfully.
System battery is dead - Replace and run SETUP	Replace battery and then run the BIOS Setup utility to restore previous configuration information.
System BIOS shadowed	This indicates that the computer's BIOS was successfully copied to shadow RAM.
System cache error - Cache disabled	RAM cache failed. Run the BIOS Setup utility and restore all settings to original values. If the problem persists, replace external cache module.

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POST and Boot Messages (continued)

Message	Description/Solution
System CMOS checksum bad - run SETUP	Correct the address conflict using the BIOS Setup utility. If the problem persists, replace main logic board.
***nnnn* System RAM passed**	Where *nnnn* is the amount of system RAM (in kilobytes) that tested successfully.
System timer error	The computer's timer test failed. Run the BIOS Setup utility and restore all settings to original values. If the problem persists, replace main logic board.
UMB upper limit segment address: *nnnn*	Displays the address of the upper limit of UMB. This indicates the released segments of the BIOS that can be reclaimed by a virtual memory manager.
Video BIOS shadowed	This indicates that the computer's video BIOS was successfully copied to shadow RAM.

Computer Troubleshooting

Problem	Possible Cause	Action
No response when the computer is turned on	Main logic board failure. Main logic board jumpers incorrectly set. CPU has failed.	Replace main logic board. Set all appropriate jumpers (Refer to *"Main logic board jumpers"*). Replace CPU.
Power is on, but there is no screen display	Brightness and contrast controls are not correctly set. The monitor-off timer has shut the monitor off. Monitor cable is incorrectly installed. Incorrect VGA drivers installed. Video controller has failed.	Adjust the brightness and contrast controls. Press [Shift] to reactivate monitor. Check all monitor connections. Install the correct VGA drivers. Replace the video controller.
Computer operates incorrectly after installing optional expansion board	Expansion board installed incorrectly. Did not run ICU to configure expansion board before installation. Expansion board has failed.	Remove expansion board and reinstall. Run the ICU to properly configure expansion board and then reboot the computer. Refer to the supplied ICU documentation. Remove expansion board and reboot. If computer boots without errors, replace expansion board.

Computer Troubleshooting (continued)

Problem	Possible Cause	Action
Computer operates incorrectly after installing optional SIMMs	SIMMs installed incorrectly.	Remove SIMMs and reinstall.
	Did not rerun BIOS Setup utility.	Rerun BIOS Setup utility.
	BIOS Setup utility changes not saved before exiting.	Rerun BIOS Setup utility and save changes.
	SIMMs have failed.	Remove SIMMs and reinstall. Make sure bank 0 is filled with the correct SIMM size, speed, and type. Replace SIMMs.
Computer operates incorrectly after installing optional external cache module	External cache module installed incorrectly.	Remove external cache module and reinstall.
	External cache module has failed.	Replace external cache module.
Computer fails to retain setup information	Computer battery has failed.	Replace computer battery.
Computer does not boot from an internal SCSI hard disk drive	Operating system software is not installed on the SCSI hard disk drive.	Install the appropriate operating system on the SCSI hard disk drive.
	Requested partition does not exist.	Partition the SCSI hard disk drive and then reload the operating software.
	Computer not configured for SCSI hard disk drive operation.	Run the BIOS Setup utility and set the IDE controller option to "Disabled." This disables the IDE interface. Note: When both IDE and SCSI hard disk drives have been installed, the computer uses the IDE hard disk drive as the boot device.
Computer does not recognize an internal or external SCSI device	SCSI device jumpers incorrectly set.	Refer to the supplied SCSI device kit installation instructions.
	SCSI cable not terminated.	Terminate each end of the SCSI bus.
	SCSI device not plugged in.	Check power and SCSI cables.
	Terminating resistors not removed from the SCSI device.	Remove terminating resistors.
	SCSI adapter failure.	Replace SCSI adapter.
	SCSI ID conflicts.	Set SCSI IDs correct.

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Computer Troubleshooting (continued)

Problem	Possible Cause	Action
Computer does not boot from a target diskette drive	Drive ID incorrectly set.	Make sure the drive ID is correctly set.
	Diskette drive not enabled.	Run the BIOS Setup utility to enable the diskette drive.
	Diskette boot option disabled.	Run the BIOS Setup utility and set and set the proper boot sequence.
	Onboard diskette controller disabled.	Run the BIOS Setup utility and set the diskette controller option to "Enabled".
	Diskette does not contain start-up files.	Insert a diskette with the correct start-up files.
Computer does not boot from an IDE hard disk drive	Operating system software is not installed on the IDE hard disk drive.	Install the appropriate operating system.
	IDE hard disk drive is not correctly formatted or the requested partition does not exist.	Format the IDE hard disk drive or partition the IDE hard disk drive using the supplied operating system software.
	There is no software on the requested partition.	Install software on the requested partition.
	IDE hard disk drive jumpers incorrectly set.	Refer to the supplied IDE hard disk drive kit installation instructions.
	IDE drive type incorrect.	Run the BIOS Setup utility to identify the correct drive type.
	Loose cables.	Secure all cable connections.
	Onboard IDE interface disabled.	Run the BIOS Setup utility and set the IDE controller option to "Enabled".
	IDE hard disk is connected to the wrong IDE connector.	Connect the boot disk to the inner IDE connector on the main logic board.
	There might be a boot sector virus.	Run appropriate software to detect and remove viruses (F-PROT).
	Hard disk boot sector is missing.	For DOS, boot from a DOS diskette then enter the following commands: **c:** **cd\dos** **fdisk/mbr**

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Computer Troubleshooting (continued)

Problem	Possible Cause	Action
No response to keyboard commands	Keyboard is password protected.	Enter the keyboard password.
	Keyboard is connected to the mouse port.	Power down the computer and connect the keyboard to the keyboard port.
No response to mouse commands	Mouse is password protected.	Enter the keyboard and mouse password.
	Mouse is connected to the keyboard port.	Power down the computer and connect the mouse to the mouse port.
	Mouse driver not installed.	Install the appropriate mouse driver.

Disk Drive Troubleshooting

Problem	Possible Cause	Action
IDE/SCSI hard disk drive cannot read or write information	Incorrect disk drive jumper settings.	Refer to the supplied kit installation instructions.
	Loose or incorrectly installed cables.	Make sure all cables are correctly installed.
	IDE drive type incorrect.	Run the BIOS Setup utility to identify the correct drive type.
	Onboard IDE interface disabled.	Run the BIOS Setup utility and set the IDE controller option to "Enabled".
	IDE/SCSI hard disk drive is not correctly formatted or partitioned.	Format and partition as required using the supplied operating system.
Target diskette drive cannot read or write information	Onboard diskette controller disabled.	Run the BIOS Setup utility and set the diskette controller to "Enabled".
	Diskette write protection is enabled.	Run the BIOS Setup utility and set the diskette write protection to "Disabled".

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Monitor Troubleshooting

Problem	Possible Cause	Action
Monitor power indicator is not on	Monitor is turned off.	Turn on the monitor.
	No power at wall outlet.	Use another outlet.
	Power indicator is defective.	Replace the failed component.
No screen display	Configuration error.	Run the BIOS Setup Utility to configure the computer for VGA operation. Set the jumper for VGA operation. Refer to *"Main Logic Board Jumpers"*.
	Monitor brightness and contrast controls are incorrectly set.	Adjust the monitor brightness and contrast controls.
No monitor display while loading Windows video drivers	Monitor type incorrectly set.	Set the correct monitor type. Refer to appropriate video driver documentation.
Distorted-rolling-or flickering screen display-or wrong/uneven color	Monitor incorrectly adjusted.	Adjust accordingly.
	Monitor signal cable incorrectly installed.	Straighten any bent connector pins and then reconnect.
Color monitor displaying monochrome	Computer was turned on before the monitor was turned on.	Turn off the computer, turn on the monitor, then turn the computer back on.
	Video jumper incorrectly set.	Set the jumper for VGA operation.
Monitor fails to switch to high-resolution mode	Appropriate high-resolution video drivers are not installed or incorrectly installed.	Correctly install all appropriate high-resolution video drivers. Refer to the documentation supplied with the monitor and/or video drivers.
Monitor display not centered while loading Windows video drivers	Monitor type incorrectly set.	Set the correct monitor type. Refer to appropriate video driver documentation.

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QAPlus/FE Error Messages

Component	Messages	Solution
CPU	Arithmetic Function Failed. General Functions Failed. Exception Interrupt in Protected Mode. Refresh Failure. Logic Functions Failed.	Reset CPU. Replace CPU.
Hard disk	Butterfly Cylinder Access Test Failed. Cylinder 0 Errors. Random Cylinder Access Failed. Linear Cylinder Access Failed.	Low-level format hard disk. Replace disk.
Hard drive/controller	Controller Diagnostic Test Failed. Questionable Controller Card. Hard drives failed.	Run Setup, Check connections, Reset controller, Replace controller, Replace disk.
Floppy diskette	Media Mismatch. Drive Not Ready. Write Protected Media. Unformatted Media.	Use known good diskette. Check size and density of diskette. Close drive door. Remove write protection. Format diskette.
Floppy drive	Floppy Drives Failed.	Check connections, Replace drive.
Battery/clock	Clock Stopped. Invalid Date. RTC Interrupt Failed.	Run Setup. Replace battery/clock.
CMOS	CMOS Clock Test Failed.	Change time from Setup menu in QAPLUS.
Serial port	COM port failed. Serial Chip Error. Serial Compare Error. Serial Timeout Error.	Check COM device. Check connections. Replace COM device. Replace COM device.
Video adapter	Video Failed. Error in Video Buffer.	Replace video adapter. Replace video adapter.

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Chapter 5 Device Mapping

This section provides a series of tables listing mapping and address information related to computer memory and various main logic board devices (keyboard controller, interrupt controller, DMA controller, etc.).

The computer's memory and address locations are allocated at the factory to operate within a standard PC environment. However, due to the number of optional devices and/or expansion boards that are available, sometimes memory and address locations need to be changed. For example, some network expansion boards require a specific memory location. If that location is already allocated, a memory conflict results and the expansion board will not operate as expected. Note that some memory, I/O and interrupt locations can be changed using the BIOS Setup utility.

> **CAUTION**
> **Before changing any memory or address location, refer to the documentation supplied with the optional device, expansion board, or software application and make sure adequate information is available.**

CPU Memory Address Map (Full Range)

Range	*Function*	*Notes*
0 KB to 640 KB	Main memory	PC compatibility range
640 KB to 1024 KB	Main memory	PC compatibility range (ISA memory lower limit)
1 MB to 16 MB	Main memory Memory space gap	ISA memory upper limit
16 MB to 128 MB	Main memory	Computer memory upper limit
64 MB to 4 GB	PCI memory	Only Venturis 560 Series
128 MB to 4 GB	PCI memory	Only Venturis FP400 Series

CPU I/O Address Map

Range (hexadecimal)	*Function*
0CF8 to 0CFF	PCI configuration space enable registers
1000 to FFFF	PCI I/O space

I/O Address Map

Range (hexadecimal)	Function
000 - 00F	DMA controller one
020 - 021	Interrupt controller one
040 - 043	Interval timer
060 - 06F	Keyboard controller
070 - 07F	Real-time clock (RTC), NMI
080 - 08F	DMA page register
0A0 - 0A1	Interrupt controller two
0C0 - 0CF	DMA controller two
0F0	Clear math coprocessor busy
0F1	Reset math coprocessor
0F8 - 0FF	Math coprocessor
170 - 177	Secondary IDE controller
1F0 - 1F7	Primary IDE controller
278 - 27A	LPT2
2E8 - 2EF	COM4
2F8 - 2FF	COM2
376 - 377	Secondary IDE controller (alt status, device address)
378 - 37A	LPT1
3B0 - 3DF	VGA register
3BC - 3BE	LPT3
3E8 - 3EF	COM3
3F0 - 3F7	Diskette controller
3F6 - 3F7	Primary IDE controller (alt status, device address)
3F8 - 3FF	COM1
46E8	VGA enable register
42E8, 4AE8, 82E8, 86E8, 8AE8, 8EE8, 92E8, 96E8, 9AE8, 9EE8, A2E8, A6E8, AAE8, AEE8, B2E8, B6E8, BAE8, BEE8, E2E8, E2EA	VGA enhanced mode registers

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Computer Interrupt Levels

Interrupt Number	Interrupt Source
IRQ0	Timer tick
IRQ1	Keyboard controller
IRQ2	Cascade interrupt
IRQ3	COM2, COM4 (if enabled)
IRQ4	COM1, COM3 (if enabled)
IRQ5	LPT2
IRQ6	Diskette drive (if enabled)
IRQ7	LPT1, LPT3 (if enabled)
IRQ8	RTC
IRQ9-IRQ11	Reserved
IRQ12	Mouse interrupt (if enabled)
IRQ13	Math co-processor
IRQ14	IDE primary (if enabled)
IRQ15	IDE secondary (if enabled)

DMA Channel Assignment

Channel	Controller	Function
0	1	Refresh
1	1	Not used
2	1	Diskette controller (if enabled)
3	1	Not used
4	2	Cascade DMA
5	2	Not used
6	2	Not used
7	2	Not used

PCI Configure Space Address Map

Device Number (hex)	Function
00	CPU bridge
01	ISA bridge
08	Onboard PCI IDE
09	Onboard PCI VGA
0B	PCI slot 1
0C	PCI slot 2

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Chapter 6   Pass / Fail Criteria

As Final Acceptance Test the following tests should be run to meet the Pass/Fail criteria:

1) Successful completion of the POST tests.

2) Successful completion of the following QAPLUS/fe module tests (one pass):

♦ System Board   (all tests)
♦ Memory   (all tests)
♦ Video   (all tests)
♦ Hard Disk   (all tests, **except: Sequential write/read (destructive test !!) and**
♦   **Sequential write/random read (destructive test !!)**)
♦ Floppy Disk   (all tests)
♦ Keyboard   (all tests)
♦ COM Ports   (all tests)
♦ LPT Ports   (all tests)
♦ Pointer Device   (all tests)

3) Successful bootstrap of the on the computer installed Operating System.

Operating Systems Supported:
◊ MS-DOS version 6.22 and earlier
◊ OS/2 version 3.0 and earlier
◊ SCO UNIX System V release 3.2.4
◊ Windows 95
◊ Windows NT
◊ Windows NT Server
◊ Novell Netware 3.12 and 4.1 and earlier
◊ SCO ODT

Remove any software that was put on the hard drive to enable repair of the system before shipping.

When completed carefully clean the outside of the unit with cleaning solution.

Appendix A   Service Notes

This appendix contains the current Service Notes for the *CELEBRIS Pentium* product line.

Recommended Tools

The following tools will be needed for servicing Digital PC systems. Note that test equipment must be in calibration.
♦   Multimeter (4 1/2 digit)
♦   A philips screwdriver
♦   An antistatic wrist strap

Other Needed Materials

Cleaning agent should be an all purpose cleaner that is used in-house.

Required Special Tools

None.

Remedial Diagnostic Test Software

♦   *QAPLUS/fe* , PC Advanced Diagnostic Software, latest version.
     Partnumber : 22-00908-06

Recommended Virus Detection and Cleanup Software

♦   **F-PROT**, Virus Detection and Cleanup Software, latest version.
     Network locations:
                 North America, South America, Australia and New Zealand:
                 MINOTR::USER6:[VIRUS.F-PROT}

                 Europe, Africa, Middle and Far East:
                 VARDAF::EUROPUB:[VIRUS_SCANNER.F-PROT]

ECO/FCO Information.

BIOS version information

Refer to the Digital DECpc Bulletin Board Support , for the latest information on BIOS upgrades

Network locations:

North America, South America, Australia and New Zealand:
PCBUHD::DKB300:[WC30.BBSFILES]

Europe, Africa, Middle and Far East:
SUTRA::D6:[PUBLIC].

Appendix B   Useful Information

Related Documentation

Document Titles	Order Numbers
CELEBRIS Pentium PC Family Quick reference Guide	EK-A0833-RG
Service Maintenance Manual Spares Catalogue	EK-A0815-SV
CELEBRIS Pentium Low-Profile Quick Setup Guide	ER-830WW-IA (English) ER-830WW-IG (German) ER-830WW-II (Italian) ER-830WW-IS (Spanish) ER-830WW-IP (French)
CELEBRIS Pentium low-Profile Users Guide	ER-830WW-UA (English) ER-830WW-UG (German) ER-830WW-UI (Italian) ER-830WW-US (Spanish) ER-830WW-UP (French)
CELEBRIS Pentium FP 590 Quick Setup	ER-840WW-IA (English) ER-840WW-IG (German) ER-840WW-II (Italian) ER-840WW-IJ (Japanese) ER-840WW-IS (Spanish) ER-840WW-IP (French)
CELEBRIS Pentium FP 590 User's Guide	ER-830WW-UA (English) ER-830WW-UG (German) ER-830WW-UI (Italian) ER-830WW-UJ (Japanese) ER-830WW-US (Spanish) ER-830WW-UP (French)

On-Line Bulletin Boards

The most current product information and technical support is also available on line. The most current device drivers, Setup diskettes and technical tips can be found on all of these bulletin boards.

♦   *DECpc Bulletin Board Server*
    DECpc BBS provides an easy-to-use, menu-driven bulletin board providing on-line access to the latest PC product information, device drivers, shareware and freeware.

    For access to the DECpc BBS, dial : **xx33 9260312**

Network Location for ;
        North America, South America, Australia and New Zealand
        PCBUHD::DKB300:[WC30.BBSFILES]

        Europe, Africa, Middle and Far East:
        SUTRA::D6:[PUBLIC].

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P.O. Box 6774
6503 GG Nijmegen
Holland

If you have questions about this document please do not hesitate to get in contact with our Call Desk. The number is:

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