Service Maintenance Manual

STARION 400 500 700

STARION 400/500/700 PC Family

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Revision History

Revision	*Date*	*Description of change*
A01	January 1996	First release of the Service Manintenance Manual describing the STARION 400/500/700 series computer.

Preface

The Digital STARION 400/500/700 PC Family Service Maintenance Manual is a troubleshooting guide that can be used for reference when servicing the STARION 400/500/700 line of PC's.
Digital Equipment Corporation reserves the right to make changes to the Digital STARION 400/500/700 series without notice. Accordingly, the diagrams and procedures in this document may not apply to the computer(s) you are servicing since many of the diagnostic tests are designed to test more than one product.

CAUTION

Digital recommends that only A+ certified engineers should 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

STARION 400/500/700 computers are high-performance personal computers equipped with the latest in computing technology. They can be used as stand-alone computers, as clients, or as servers in a network environment. Developed using the following state-of-the-art technology, these computers are the most value packed mini-deskside computers in their class.

- ***Microprocessor***
  - 60 or 90 MHz Pentium processor
- ***Memory***
  - STARION 400/500, 8 MB System RAM, expandable to up to 128 MB
  - STARION 700, 8 MB System RAM, expandable up to 72 MB
- ***Cache***
  - STARION400, 0Kb, upgradable to 256KB
  - STARION500, 256KB, upgradable to 512KB
  - STARION700, 256KB, not upgradable
- ***PCI Local Bus Technology***
  - Onboard Video Cirrus Logic, 64-bit, and advanced video cache technology to take full advantage of the computers CPU
- ***Video Memory***
  - standard with a minimum of 1 MB of onboard DRAM
- ***Fax/Modem/Sound Card***
  - Sophisticated fax/data/voice modem and 16-bit FM synthesis sound card CD-ROM Reader
- ***Double-speed CD-ROM reader***
  - Industry-standard IDE/ATAPI interface and audio capability

Product Introduction (continued)

- ***Tape Backup System (STARION 500/700 Only)***
  - ◊ 250 MB capacity (using compress) or 125 MB native

- ***IDE***
  - ◊ Model 400/500 - Standard ISA IDE interface - supports up to two devices
  - ◊ Model 700 - Standard ISA IDE interface - supports up to two devices
  - ◊ PCI-IDE interface - supports up to two additional enhanced IDE devices

Product Models Information

STARION 400/500/700 Models

Product	*Model*	*CPU*	*HDD*	*Memory*
STARION 400	FR-902AA-A2	60 Mhz Pent.	540MB	8MB
STARION 500	FR-902AA-A1	60 Mhz Pent.	540MB	8MB
STARION 700	FR-903AA-A1	90 Mhz Pent.	730MB	8MB

Product	*Video*	*Cache*	*CDROM*	*Tape*
STARION 400	C&T63400	0	2-Speed	None
STARION 500	C&T63400	256KB	2-Speed	250MB
STARION 700	Cirrus 5434	256KB	2-Speed	250MB

Chapter 2 Server Utilities & Configuration

System Utilities

This chapter describes how to use the utilities and video drivers supplied with the STARION 400/500/700 computer. These utilities and drivers have been factory installed on the hard disk drive. You may use the video utilities to change video graphics settings of the monitor. Additional video drivers, utility programs, and device drivers have also been factory installed as image files on the hard disk drive. This chapter also describes PHLASH.EXE, which is not supplied with the computer. This utility is available only via bulletin board distribution to customers needing BIOS upgrades.

Before Using System Utilities and Video Drivers

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

Using Utilities & Video Drivers

The system utilities and video drivers enable to take full advantage of the computers enhanced video features. Use the following information to reset the video mode of the monitor, or to load MS-DOS application drivers if the are using various non-Windows CAD or business software.

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 *Chapter 4, "Troubleshooting"* for possible causes and suggested solutions.
2) If necessary, run PHLASH.EXE to upgrade or restore the computer's BIOS.
3) Install any applicable DOS or CAD application video drivers. Additional information about these drivers is provided later in this chapter.

4) Install any Windows 3.x video drivers. Additional information about these drivers is provided later in this chapter.

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 that the computer's BIOS can be restored simply by running the PHLASH.EXE. 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 all of the listed topics and be sure to understand them 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.
2) If POST detects an error refer to *Chapter 4, "Troubleshooting"* and take the appropriate steps to correct the problem. After the problem has been resolved, restart the computer.
3) Insert the created diskette via the bulletin board and make sure the following files are in the UPGRADE directory:
   MINIDOS.SYS
   PHLASH.EXE
   DEVTBLS.DAT
   PHLASH.INI
   STARION.ROM
   MAKEBOOT.EXE
   MAKECRD.EXE

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

4) Create the same directory on the hard disk drive and then copy the above files to it.
5) Insert a blank formatted diskette into drive A.
6) On drive A, make a directory for the files previously copied.
7) From drive C, type: ***MAKECRD***. This copies the files to drive A.
8) 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 computers BIOS fails or if a BIOS upgrade was unsuccessful.

If the computers BIOS fails:

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

On the STARION 700 only:

Set the recovery jumper (J1H1) to enabled. Insert the crisis recovery diskette into drive A and power on the computer. After the BIOS is restarted, turn off the power and remove the crisis recovery diskette from drive A. Turn the power back on for normal operation.

Upgrading The Computer's BIOS

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

1) Turn on the computer and allow the POST to complete.
   If POST detects an error refer to *Chapter 4, "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 when 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 the computers BIOS is about to be erased.
5) Press **[Enter]** when continuation is wanted. If not, press **[Esc]** to cancel.
6) Once **[Enter]** is pressed, PHLASH.EXE automatically updates the computers BIOS.
7) After the flashing process completes, the computer automatically reboots itself so changes immediately take effect.
8) Remove the system utilities diskette.

Video Drivers & Utilities

Setting High Resolution Mode for The Monitor Display

When having a high resolution monitor, you might want to run the Display Driver Control Panel located in the Program Manager Windows Control Panel Group. This utility is provided to allow to increase the computer video resolution output to match the display specifications of the monitor.

To change the video resolution, perform the following steps:

1) From the Program Manager, access the Windows Control Panel Group.
2) For the **STARION 400/500**, double click on the ChipsCPL icon to open the Display Driver Control Panel. Select the monitor size, colors, and refresh settings that match the monitors specifications.
3) For the **STARION 700**, double click on the WinMode icon to open the video resolution control panel. Select the resolution, colors, font size, monitor refresh rate, font cache size to match the monitor specification and personal preferences.

NOTE If the monitor is not listed, select the 000, Generic VGA selection.

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.

MS-DOS Application Video Drivers

Various software drivers for popular MS-DOS based CAD and business applications have been provided on the MS-DOS video driver diskette that is made using the Program Disks and the Driver Disks tab. If you are using an older non-Windows application such as ACAD or Lotus for DOS, loading one or more of these drivers might be necessary.

Video Drivers for Windows

The computer comes with the required Windows video display driver pre-installed at the factory. However, if the hard disk drive becomes corrupted, you might need to re-load the Windows video driver that has been provided on the Windows video driver diskette that is made using Program Disks and the Driver Disks tab. To reload the Windows driver, perform the following steps.

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]**. The video setup screen appears again with the S3 driver.

NOTE The resolution and refresh rate must be the same as the selection made using the SMTR.EXE utility.

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

BIOS Setup Utility

This chapter provides information on 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 appropriate sections in this chapter to set up or update the computer. Otherwise, carefully read this chapter before attempting to modify the computer's configuration settings.

Running the BIOS setup Ultility

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 setup is runned.
Use the BIOS Setup utility when experiencing problems with the hard disk or when reconfiguration of the computer is necessary. In addition, the BIOS Setup utility might need to be used to modify the configuration after you add or remove hardware, or change computer settings.

To run the BIOS Setup utility, perform the following steps:

1) Turn on the computer and allow the 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 the monitor screen and any on-line help pop-up screens to configure the computer.

Updating The Computer's Configuration

The following sections list the BIOS Setup utility options that can be updated or modified using the following menu selections:

- Main — enables to set basic computer configuration options (time, date, video, etc.)
- Advanced — enables to set advanced features to increase computer performance (memory, COM ports, LPT port, etc.)
- Security — enables to set passwords and backup data reminders
- Power — enables to set power saving options to conserve electricity and increase the life of the computer
- Exit — enables to quit the current menu and save setup changes

Helpful Hints

Below are some helpful hints when using the BIOS Setup utility:

1) Several keyboard function keys and numeric keypad keys are assigned to help select menus and sub-menus, 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.
2) 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.
3) Select *"Save Changes & Exit"* to save all Setup values.
4) Select *"Discard Changes & Exit"* to exit Setup without recording any changes.
5) Select *"Get Default Values"* to set all Setup options to their default values.
6) Select *"Load Previous Changes"* to restore all CMOS values from the last session.
7) Select *"Save Changes"* to save all selections without exiting Setup.
8) Press **[Esc]** to exit the Setup utility.

Starion 400/500 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 ordered language kit.

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.

Starion 400/500 Main Menu Options (continued)

Menu Field	*Settings*	*Comments*
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.

Starion 400/500 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 sequence selected.
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.
Summary screen	Enabled Disabled	Enabling this option causes the computer to display configuration parameters (in the form of a summary screen) during boot.

Starion 400/500 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 drives 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.

Starion 400/500 Fixed Disk Setup Options
IDE Adapter 0/1 Master/Slave (continued)

Menu Fields	*Settings*	*Comments*
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 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.

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 & Cache

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 segments of ROM 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.

STARION 700 Main Menu Options

Menu Fields	*Settings*	*Comments*
System date	Current date	Displays the current date.
System time	Current time	Displays the current time.
Floppy drive A Floppy drive 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.

STARION 700 Main Menu Options (continued)

Menu Fields	*Settings*	*Comments*
Hard disk C: **Hard disk D:** **Hard disk E:** **Hard disk F:**	Disk drive assignments	Drive letters are assigned as follows:PCI IDE interface only: Master = C: Secondary = D: ISA interface only: Master = C: Secondary = D: ISA and PCI IDE interface used (two drives): PCI Master = C: ISA Master = D: ISA and PCI IDE interface used (three drives): PCI Master = C: PCI Secondary = D: ISA Master = E: PCI Master = C: ISA Master = D: ISA Secondary = E: ISA and PCI IDE interface used (four drives): PCI Master = C: PCI Secondary = D: ISA Master = E: ISA Secondary = E: When drives have multiple partitions, partitions beyond the primary partition will be assigned in ascending order. This is based on available drive letters and other installed drives.
Hard Disk Sub-Menu		Selecting this option displays the following hard disk sub-menu:
Hard disk type	Auto configured User definable	Select auto configure to automatically detect the installed hard disk drive parameters. Selecting User definable prompts to fill in the installed hard disk drives parameters.
Cylinders	0 to 4095	Displays the number of cylinders.
Heads	1 to 64	Displays the number of heads.
Sectors	0 to 63	Displays the number of sectors/tracks.
Maximum capacity		This value is calculated from the cylinder, head, and sector parameters defined above.

STARION 700 Main Menu Option (continued)

Menu Fields	*Settings*	*Comments*
Initialization timeout	Disabled 5 sec 10 sec 31 sec	Determines the IDE auto-configuration timeout. If the computer fails to determine the drive type, an error message appears on the monitor screen. Refer to *Chapter4, "Troubleshooting"* for possible solutions.
IDE translation table	Standard CHS Logical block Extended CHS Auto detected	Controls how the computers BIOS interacts with the hard disk drive in terms of drive geometry. Selecting the best option is based on the hard disk drives size, capabilities, and operating system used. Selecting Auto Detected enables the computers BIOS to determine the best operating mode for the hard disk drives installed. Standard CHS limits IDE hard disk drive capacity of 528 MB regardless of the size of the drive used. Logical block should be used if the hard disk drive and operating system supports logical block addressing (LBA) or uses the BIOS to access the drive. Extended CHS should be used if the hard disk drive is larger than 528 MB and does not support LBA.
Multiple sector setting	Disabled 4 8 Auto detected	These settings control the number of sectors that are transferred by an IDE hard disk drive per interrupt generated. Disabled generates an interrupt for each sector transferred. Auto Detected causes x number of sectors to be transferred per interrupt, where x is the maximum value supported by the hard disk drive.
Fast Programmed I/O modes	Disabled Auto detected	This option controls the speed in which the programmed I/O (PIO) transfers occur on the PCI IDE interface. Transfers occur at an un-optimized (mode 0) speed if Disabled is selected. Transfer occur at the rate in which the hard disk drive reports as its maximum (up to and including the maximum mode 3 timing) if Auto Detected is selected. Select Disabled if the hard disk drive does not function properly with advanced timings.
Language	English	Controls the language of text strings used in Setup and the BIOS. Any installed language appears as an option in its own language. For example, German appears as Deutch. Also, only installed languages appear as options.
Boot Options Sub-Menu		Selecting this option displays the following boot options sub-menu.
Boot up sequence	C: first, then A: A: first, then C: C: only A: only	Determines the computers boot sequence.
System cache	Disabled Enabled	Controls both the primary and secondary caches. Selecting Disabled hurts overall computer performance. However, you might need to select Disabled when running software that uses timing loops and needs to slow down to execute properly.

STARION 700 Main Menu Option (continued)

Menu Fields	*Settings*	*Comments*
Boot speed	Turbo De-turbo	Controls the computers CPU cycles. Selecting De-turbo mode slows the CPU by disabling the computers cache and adding increased refresh cycles. It does not reduce CPU speed.
Num Lock	Off On	Turns on or off the numlock feature each time the computer boots.
Setup prompt	Disabled Enabled	Controls whether or not the Press <F1> Key To Enter Setup message appears each time the computer boots. This options does not control access, just the message.
Hard disk pre-delay	Disabled 1 second 2 seconds 3 seconds 4 seconds 5 seconds 6 seconds 7 seconds	Delays the BIOS attempt to initialize the first IDE drive in the computer. The delay value is determined by the amount of time it takes for a hard disk drive to spin up to speed.
Typematic rate programming	Enabled Disabled	Enables or disables the following typematic options:
Video mode	Not user selectable	Displays the detected video mode.
Mouse	Not user selectable	If computer supports a PS/2 style mouse, and a mouse is installed, this field is displayed.
Base 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.

STARION 400/500 Advanced Chip Set Control

Menu Fields	*Settings*	*Comments*
Post I/O writes	Disabled Enabled	Enabling this option increases the computers 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.

STARION 400/500 Advanced Chip Set Control (continued)

Menu Fields	*Settings*	*Comments*
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.

STARION 700 Advanced Menu

Menu Fields	*Settings*	*Comments*
Processor type	Not user selectable	Displays the installed CPU type.
Processor speed	Not user selectable	Displays the installed CPU speed.
Cache size	Not user selectable	Displays the installed cache size.

Peripheral Configuration Sub-Menu

Menu Fields	*Settings*	*Comments*
Configuration mode	Auto Manual	Controls whether onboard resources are manually or automatically setup. Resources include: IDE drives, diskette drives, serial and parallel ports, etc.
PCI IDE interface	Enabled Disabled	Allows to enable or disable the PCI IDE interface.
Standard ISA IDE interface	Enabled Disabled	Allows to enable or disable the Standard ISA IDE interface.
Floppy interface	Enabled Disabled	Allows to enable or disable the floppy interface.
Serial port 1 address	Disabled COM1, 3F8h COM2, 2F8h COM3, 3E8h COM4, 2E8h	Enables or disables the first onboard serial port at the specified address.
Serial port 2 address	Disabled COM1, 3F8h COM2, 2F8h COM3, 3E8h COM4, 2E8h	Enables or disables the first onboard serial port at the specified address.

Parallel port address	Disabled LPT3, 3BCh LPT1, 378h LPT2, 278h	Sets the onboard parallel port mode.

Periheral Configuration Sub-Menu (continued)

Menu Fields	*Settings*	*Comments*
Parallel port mode	Compatible Extended	Compatible - standard printer connectionExtended - Extended capabilities port mode
Serial port 1 IRQ	Interrupt used	Displays the interrupt used by the serial port.
Serial port 2 IRQ	Interrupt used	Displays the interrupt used by the serial port.
Parallel port IRQ	Interrupt used	Displays the interrupt used by the parallel port.

Advanced Chipset Configuration Sub-Menu

Menu Fields	*Settings*	*Comments*
Base memory size	640 KB 512 KB	Sets the computers base memory size.
ISA bus speed	Compatible Enhanced	External Frequency Compatible Enhanced 60 MHz 7.5 MHz 10 MHz 66 MHz 8.25 MHz 11 MHz
Byte merging	Enabled Disabled	Enabling this option increases performance for older applications that write to video memory in bytes instead of words. Note that not all PCI video cards support this option.

STARION 700 Advanced Menu (continued)

Menu Fields	*Settings*	*Comments*
PCI IDE prefetch buffers	Enabled Disabled	Enables or disables a set of prefetch buffers in the PCI IDE controller.
ISA LFB size	Disabled 1 MB 3 MB 7 MB	The ISA video linear frame buffer size creates a hole in the computers memory map. Accesses made to addresses within this hole are directed to the ISA bus instead of main memory. Disable this option when using an ISA card with memory greater than 64 KB that needs to be accessed by the CPU, and when not using Plug and Play runtime utilities.
ISA LFB base address	Not user selectable	Displays the starting address of the ISA memory hole if a value other than Disabled is chosen for the ISA Video LFB Size parameter.
Video palette snoop	Disabled Enabled	Controls the ability of a PCI graphics video card to snoop write cycles to an ISA video cards color palette registers.
Latency timer (PCI clocks)	0 - 256	Controls the length of time an agent on the PCI bus can hold the bus when another agent has requested the bus. The default value is 66.

STARION 400/500 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		Sets the onboard parallel port mode.
	Compatible mode	Compatible mode - standard printer connection.
	Bi-directional mode	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 drives write protect option.
IDE adapter 0/1	Enabled Disabled	Enables or disables the onboard IDE controller.

Large Disk Access Mode

Menu Fields	*Settings*	*Comments*
Large disk access mode	DOS Other	Select DOS if MS-DOS is installed. Select Other when another operating system is installed.

Power Options

Menu Fields	*Settings*	*Comments*
Power management	Enabled Disabled	Enables or disables the computers 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, allows 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, allows 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, allows 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].

STARION 400/500 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.

STARION 400/500 Security Options (continued)

Menu Fields	*Settings*	*Comments*
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.

STARION 700 Security Options

Menu Fields	*Settings*	*Comments*
User password is	Disabled Enabled	Tells whether or not the user password is enabled or disabled. If neither the `User Password Is` or the `Administrative Password Is` options are set to `Enabled`, the `Unattended Start` or `Security Hot Key` options are not displayed.
Administrative password is	Disabled Enabled	Tells whether or not the administrative password is enabled or disabled. If neither the `User Password Is` or the `Administrative Password Is` options are set to `Enabled`, the `Unattended Start` or `Security Hot Key` options are not displayed.
Set user password	Press [Enter]	Follow the instructions on the screen to set a user password.
Set administrative password	Press [Enter]	Follow the instructions on the screen to set an administrative password.
Unattended start	Enabled Disabled	Controls when a user password is required. If set to Disabled, the user password is required before the computer boots from either a hard disk drive or network. If set to Enabled, a user password is required before the computer completes its boot sequence.
Security hot key	Alpha-numeric key	Defines a key that works in conjunction with [CTRL] + [ALT] to secure the computer from an unauthorized access.

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 any 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 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 Needed Materials

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

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

  Most of Europe, Africa, Middle and Far East:
  Data Fellows Ltd
  Paivantaite 8
  FIN-02210 ESPOO
  FINLAND
  tel: +358-0-478 444
  fax: +358-0-478 44 599
  e-mail: f-prot@datafellows.fi
  Internet : http://www.datafellows.fi (Data Fellows Ltd. homepage)

ECO/FCO Information

BIOS version information

Refer to the Digital DECpc Bulletin Board Support (telephone number: **1-508-496-8800**) for the latest information on BIOS upgrades.

NOTE This BBS is **NOT** a source for technical support. For advice, please call the Digital Equipment Service Representative, **1-800-354-9000**

Unlocking and Removing the Cover

Before starting and before removing the cover, do the following:

1) Turn off power to all external devices connected to computer.
2) Turn computer off.
3) Unplug power cord from wall outlet.
4) Disconnect power cord and monitor cord from computer.

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 install any hardware option.

To remove the cover:

1) Loosen and remove three screws along perimeter of rear panel to release cover from chassis.
2) Carefully slide cover toward front of chassis until it clears rear panel.
3) Carefully lift cover from chassis.

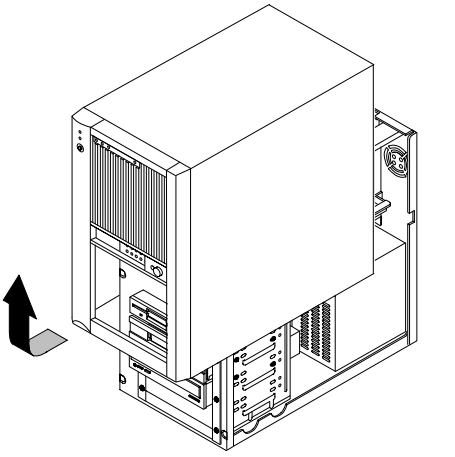

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Figure 3 - 1 Removing the Cover

Computer Components

Legend	*Description*
A	Power supply
B	Main logic board
C	Front access 3½-inch diskette drive
D	Front access tape drive (Only STARION 500 & 700)
E	Front access CD-ROM
F	Bottom front access drive bay
G	Internal drive bay
H	Riser card (supports up to four expansion boards; three ISA and one PCI or two ISA and two PCI)
I	FAX/modem/sound card

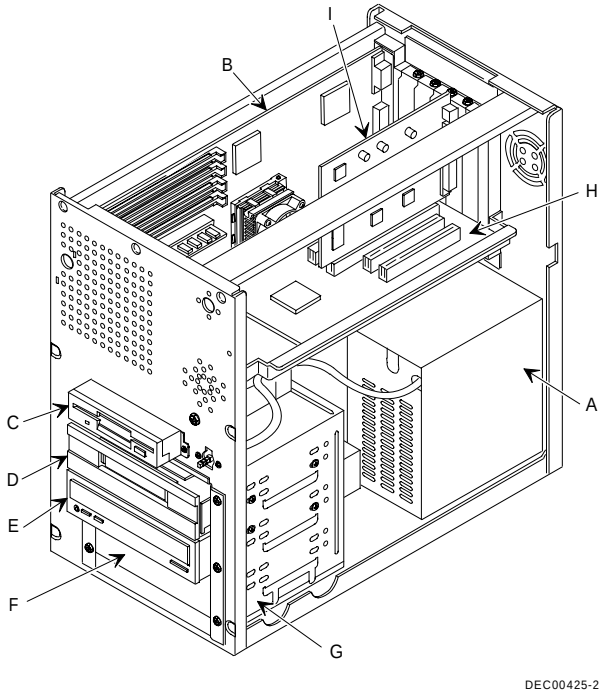

Figure 3 - 2 Computer Components

Expansion Slots

The **STARION 400/500/700 computer models** contains five slots for installing up to four ISA or PCI expansion boards (refer to the following Table). These five slots are located on the computer's riser card. Note that the Fax/Modem/Sound card occupies ISA slot J6.

NOTE When installing expansion boards, always read the accompanying documentation for computer memory address and IRQ requirements. Compare that information to the computer memory and IRQ requirements in *Chapter 5, "Device Mapping"*. If conflicts are detected, The expansion board must be configured to alternate settings.

Expansion Slot Types & Locations

Expansion Slot	***Slot Type***	***Description***
J7 and J9	ISA	Supports full-length industry-standard 16-bit ISA expansion boards
J6	ISA	Supports full-length industry-standard 16-bit ISA expansion boards Designated as a shared slot with PCI slot J4(1)
J4	PCI	Supports full-length 32-bit PCI local bus expansion boards Designated as a shared slot with ISA slot J6(1)
J3	PCI	Supports full-length 32-bit PCI local bus expansion boards

1) Only one expansion board can reside in slot J6 and J4 at any one time. These slots have to share the slot opening at the rear panel

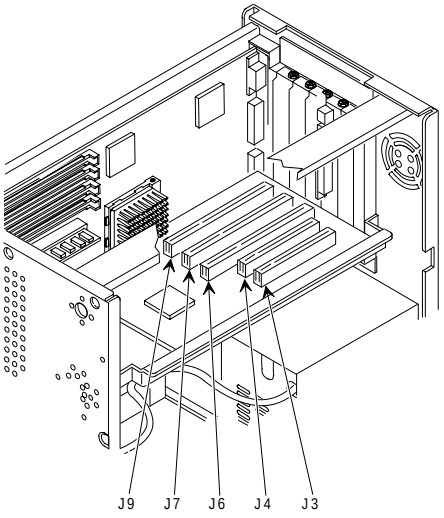

Figure 3 - 3 STARION 400/500/700 Expansion Slots

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.

STARION 400/500 Main Logic Board Jumper Settings

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

Feature	*Description*	*Setting*
Clear CMOS	***Normal***	***JP2, pins 1 and 2 jumpered***
	Clear CMOS	JP2, pins 2 and 3 jumpered
IRQ jumper	***COM1 to IRQ4***	***JP3, pins 1 and 2 jumpered***
	COM1 to IRQ10	JP3, pins 3 and 4 jumpered
	COM2 to IRQ3	***JP3, pins 5 and 6 jumpered***
	COM2 to IRQ11	JP3, pins 7 and 8 jumpered
	LPT1 to IRQ7	***JP3, pins 9 and 10 jumpered***
	LPT1 to IRQ5	JP3, pins 11 and 12 jumpered
	Not supported	JP3, pins 13 and 14 jumpered
	Not supported	JP3, pins 15 and 16 jumpered
	Not supported	JP3, pins 16 and 17 jumpered
Color	***Enable***	***JP6, pins 1 and 2 jumpered***
	Disable	JP6, pins 2 and 3 jumpered
CPU speed	60 MHz	JP10, pins 2 and 3 jumpered
		JP11, pins 2 and 3 jumpered
		JP12, pins 2 and 3 jumpered
	66 MHz	JP10, pins 1 and 2 jumpered
		JP11, pins 1 and 2 jumpered
		JP12, pins 1 and 2 jumpered
ISA to IDE	***IRQ14 (primary)***	***JP9, pins 1 and 2 jumpered***
	IRQ15 (secondary)	JP9, pins 2 and 3 jumpered
Local onboard video	***Enable***	***JP13, pins 1 and 2 jumpered***
	Disable	JP13, pins 2 and 3 jumpered

STARION 400/500 Main Logic Board Jumper Locations

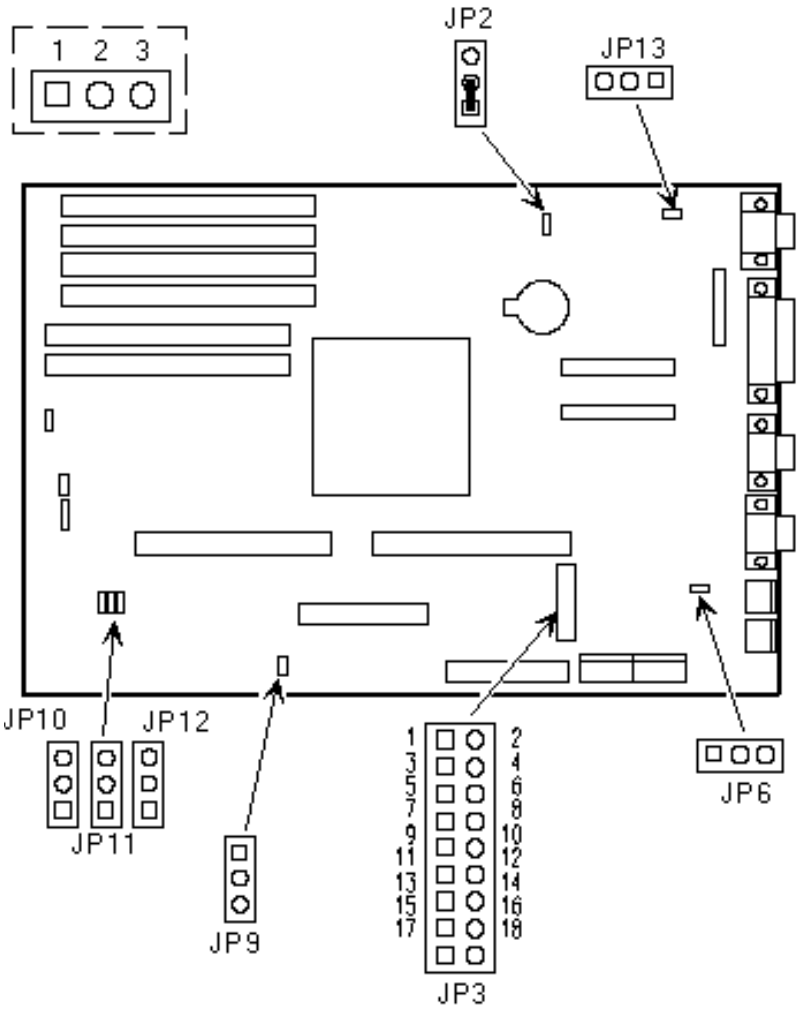

Figure 3 - 4 STARION 400/500 Main Logic Board Jumper Locations

STARION 700 Main Logic Board Jumper Settings

Feature	*Description*	*Setting*
Fan speed	Slow Fast	J4A1 jumpered J4A2 jumpered
Turbo switch	Turbo De-turbo	J5A2 jumpered J5A2 open
Reserved	Reserved	J9N1 J9N2 **NOTE:** Changing these factory installed settings might affect computer operation.
Reserved	Reserved	J1J1 J1J2 **NOTE:** Changing these factory installed settings might affect computer operation.
BIOS recovery	Enabled Disabled	J1H1 jumpered J1H1 open
BIOS upgrade	Enabled Disabled	J1H2 jumpered J1H2 open
Password	Enabled Disabled	J1H4 jumpered J1H4 open
Display type	Mono Color	J1H5 open J1H5 jumpered
Setup program	Enabled Disabled	J1H3 jumpered J1H3 open

STARION 700 Main Logic Board Jumper Locations

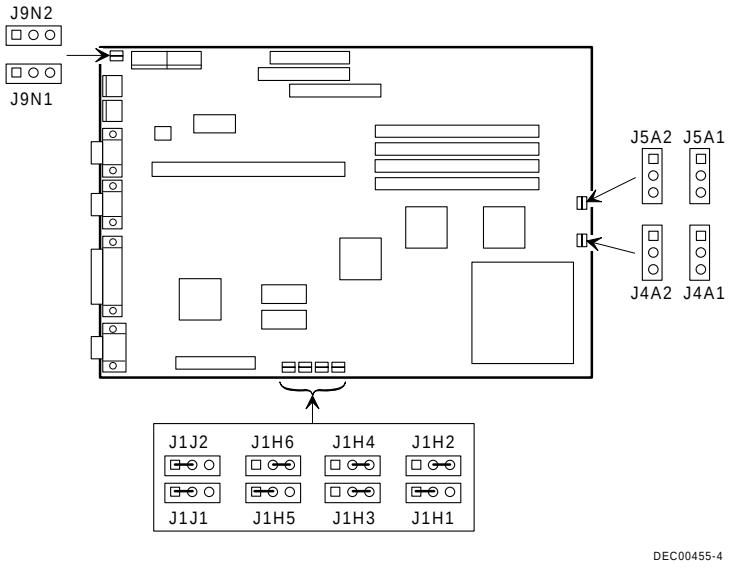

Figure 3 - 5 STARION 700 Main Logic Board Jumpers Locations

Computer Memory Configurations

Adding more memory allows the computer to run larger, more complicated software and to run it faster.

STARION 400/500 Memory Configurations

The STARION 400/500 computer comes with at least 8 MB of memory.This amount can be increased up to 128 MB of additional memory (not including the 8 MB).

NOTE Some STARION computers do not support up to 128 MB of memory. If provided, refer to model specific supplemental information.

However, when adding additional memory make sure to:

- Install 32-bit SIMMs having an access time of 70 ns or less. SIMMs must be installed in pairs. Banks 0 and 1 must always be filled before banks 2 and 3.
- SIMM sizes cannot be mixed within pairs of banks. For example, a 1 MB SIMM you cannot be installed in bank 0 together with a 4 MB SIMM in bank 1.
- When choosing to mix SIMM sizes, make sure the SIMMs that have the lower capacity are installed in banks 0 and 1.

NOTE 36-bit SIMMs will also work, however, the four parity checking bits are not supported.

Bank 0	***Bank 1***	***Bank 2***	***Bank 3***	***Total***
1 MB	1 MB			**2 MB**
2 MB	2 MB			**4 MB**
4 MB	4 MB			**8 MB**
8 MB	8 MB			**16 MB**
16 MB	16 MB			**32 MB**
32 MB	32 MB			**64 MB**
1 MB	1 MB	1 MB	1 MB	**4 MB**
1 MB	1 MB	2 MB	2 MB	**6 MB**
2 MB	2 MB	2 MB	2 MB	**8 MB**
1 MB	1 MB	4 MB	4 MB	**10 MB**
2 MB	2 MB	4 MB	4 MB	**12 MB**
4 MB	4 MB	4 MB	4 MB	**16 MB**
1 MB	1 MB	8 MB	8 MB	**18 MB**
2 MB	2 MB	8 MB	8 MB	**20 MB**
4 MB	4 MB	8 MB	8 MB	**24 MB**
8 MB	8 MB	8 MB	8 MB	**32 MB**
1 MB	1 MB	16 MB	16 MB	**34 MB**
2 MB	2 MB	16 MB	16 MB	**36 MB**
4 MB	4 MB	16 MB	16 MB	**40 MB**

8 MB	8 MB	16 MB	16 MB	**48 MB**
16 MB	16 MB	16 MB	16 MB	**64 MB**

Computer Memory Configurations (continued)

Bank 0	*Bank 1*	*Bank 2*	*Bank 3*	*Total*
1 MB	1 MB	32 MB	32 MB	**66 MB**
2 MB	2 MB	32 MB	32 MB	**68 MB**
4 MB	4 MB	32 MB	32 MB	**72 MB**
8 MB	8 MB	32 MB	32 MB	**80 MB**
16 MB	16 MB	32 MB	32 MB	**96 MB**
32 MB	32 MB	32 MB	32 MB	**128 MB**

STARION 400/500 SIMM Sockets Locations

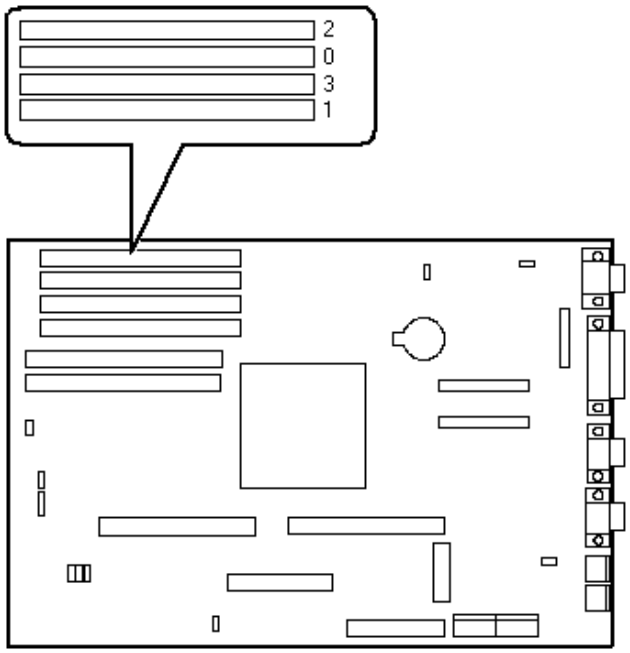

Figure 3 - 6 STARION 400/500 SIMM Sockets Locations

STARION 700 Memory Configurations

The STARION 700 computer comes with 8 MB of memory hardwired to the main logic board. this amount can be increased up to 72 MB by installing either 32-bit non-parity or 36-bit parity SIMM modules in SIMM sockets J6D1 and J5D1.

CAUTION

Do not attempt to install SIMM modules in SIMM sockets J7D1 and J6D2 (bank 0). The factory-installed 3½-inch diskette drive covers these sockets. Damage to SIMM modules can result by forcing them into these sockets.

When adding additional memory, make sure:

- Both the J6D1 and J5D1 SIMM sockets (bank 1) are filled.
- The computer automatically detects the amount of memory installed, so having bank 0 depopulated does not affect how memory is counted.
- SIMMs have an access time of 70 ns or less.
- fill both sockets using the same SIMM size, type, and speed. Supported SIMM sizes: 4 MB, 8 MB, 16 MB, and 32 MB.

STARION 700 Memory Configurations

Main Logic Board	*J6D1*	*J5D1*	*Total*
8 MB			**8 MB**
8 MB	4 MB	4 MB	**16 MB**
8 MB	8 MB	8 MB	**24 MB**
8 MB	16 MB	16 MB	**40 MB**
8 MB	32 MB	32 MB	**72 MB**

STARION 700 SIMM Sockets Locations

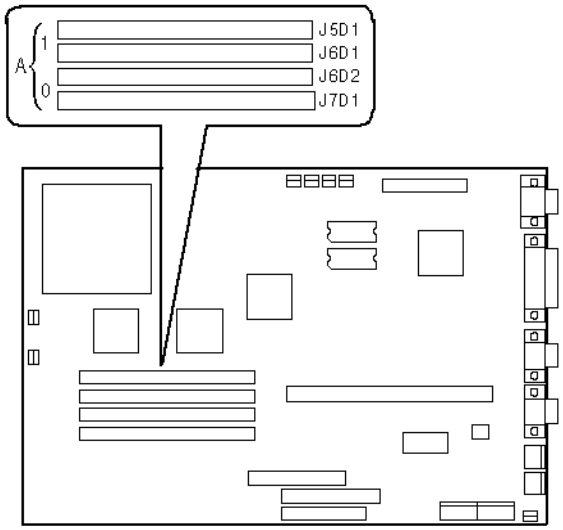

Figure 3 - 7 STARION 700 Simm Sockets Locations

Part Removal and Replacement

Removing the 3½-Inch Diskette Drive

To remove the 3½-inch diskette drive:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Remove cover.
4) Remove two screws securing the diskette drive to front panel.
5) Disconnect power cable.
6) Slightly lift front of drive to clear front panel and slide diskette drive out of the front of the chassis.
7) Disconnect ribbon cable.
   Refer to "*Connecting Diskette and IDE Devices"*.

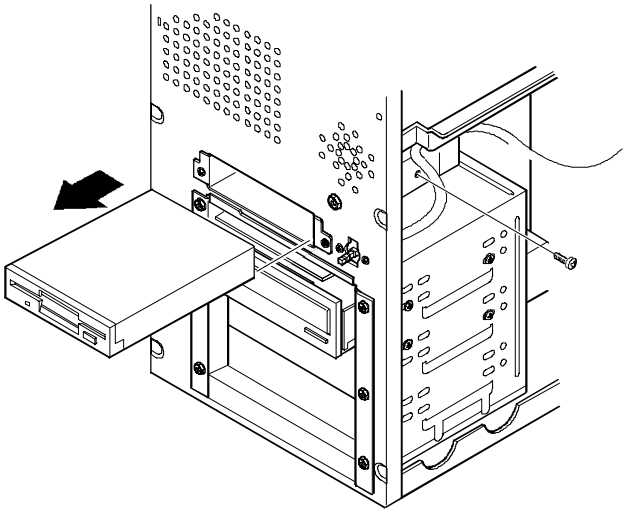

Figure 3 - 8 Removing the 3½-Inch Diskette Drive

Removing a 5¼-Inch Device

To remove a 5¼-inch device:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Remove cover.
4) Remove four screws securing the device to device bay.
5) Disconnect power and data/audio cables.
   Refer to "*Connecting Diskette and IDE Devices"*.
6) Slide device out of the front of the chassis.

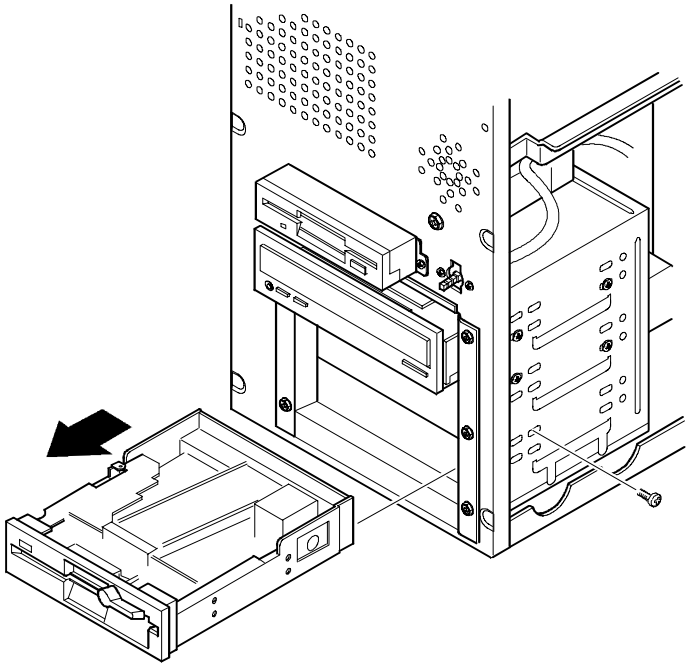

Figure 3 - 9 Removing a 5¼-Inch Device

Removing the IDE Hard Disk Drive

To remove the IDE hard disk drive:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Remove cover.
4) Remove metal filler plate.
5) Remove four screws securing hard disk drive to device bay.
6) Disconnect power and ribbon cables.
7) Slide drive toward rear of computer to clear guide tab on left side.
8) Lift front of device up and over guide tab and slide drive out of the front of the chassis. Refer to "*Connecting Diskette and IDE Devices*".

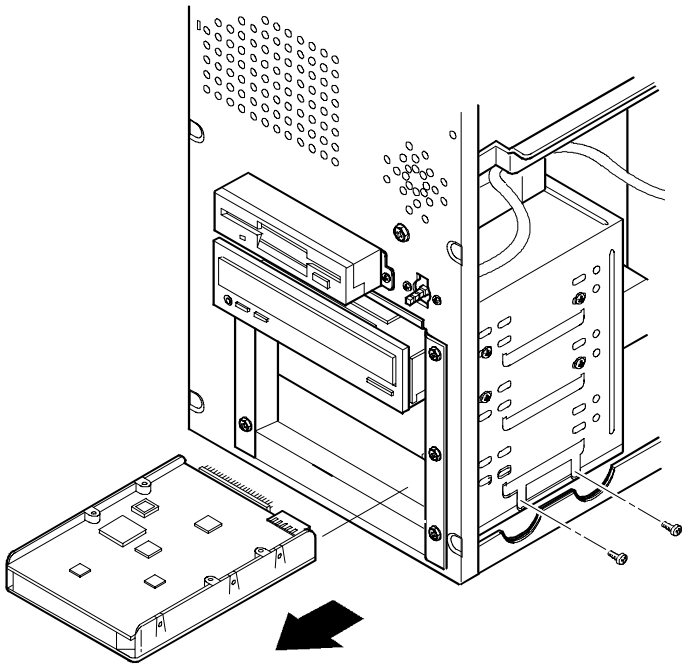

Figure 3 - 10 Removing the IDE Hard Disk Drive

Removing Expansion Boards

To remove an expansion board:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Unlock and remove cover.
4) Remove screw from metal filler plate.
5) Gently pull board outward.

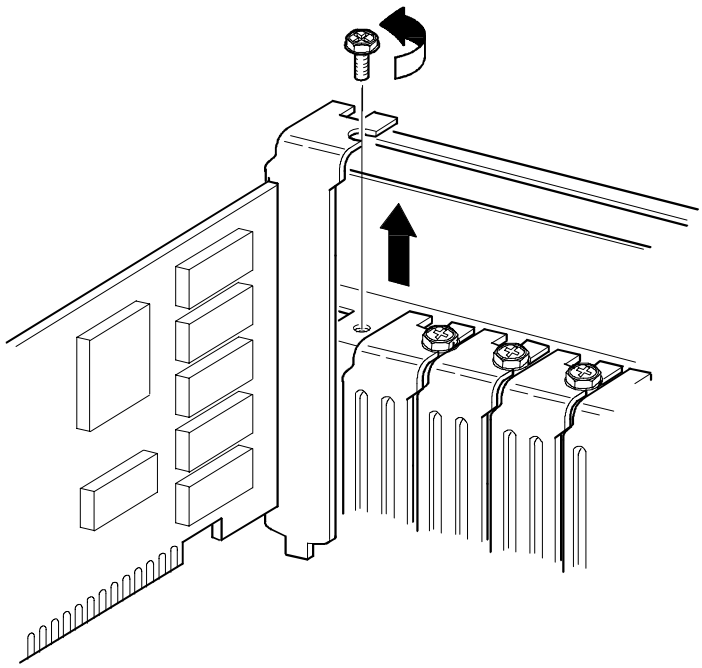

Figure 3 - 11 Removing Expansion Boards

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.

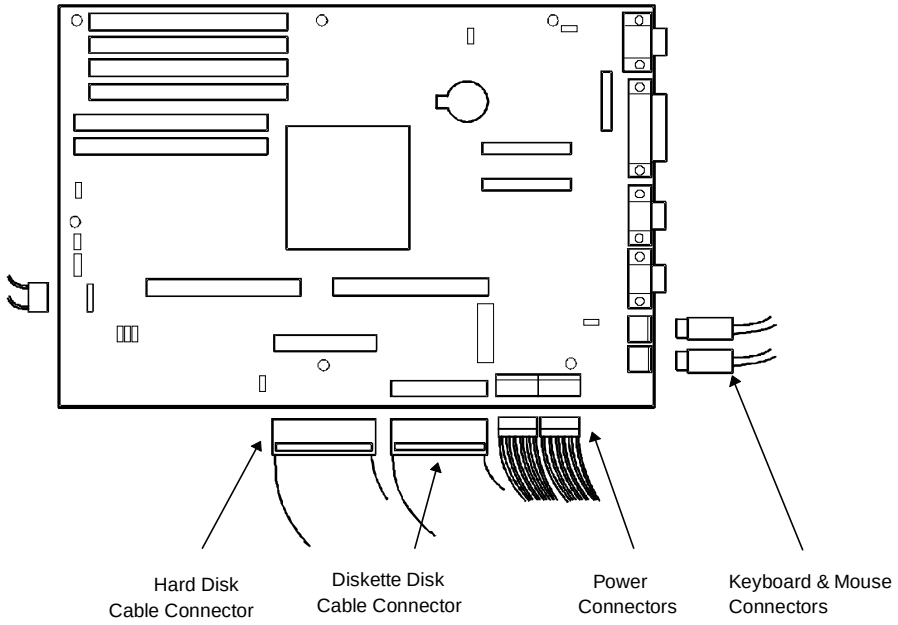

Figure 3 - 12 Removing the Main Logic Board (STARION 400/500 shown)

Removing the Power Supply

To remove the power supply:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power.
3) Remove cover.
4) Disconnect power supply cabling from main logic board noting the proper orientation.
5) Disconnect power supply cables from all devices.
6) Loosen two screws securing power on/off switch to chassis.
7) Remove screws securing power supply to chassis (bracket on bottom of case (one) and rear panel (four).
8) Remove power supply and power on/off switch from the chassis.

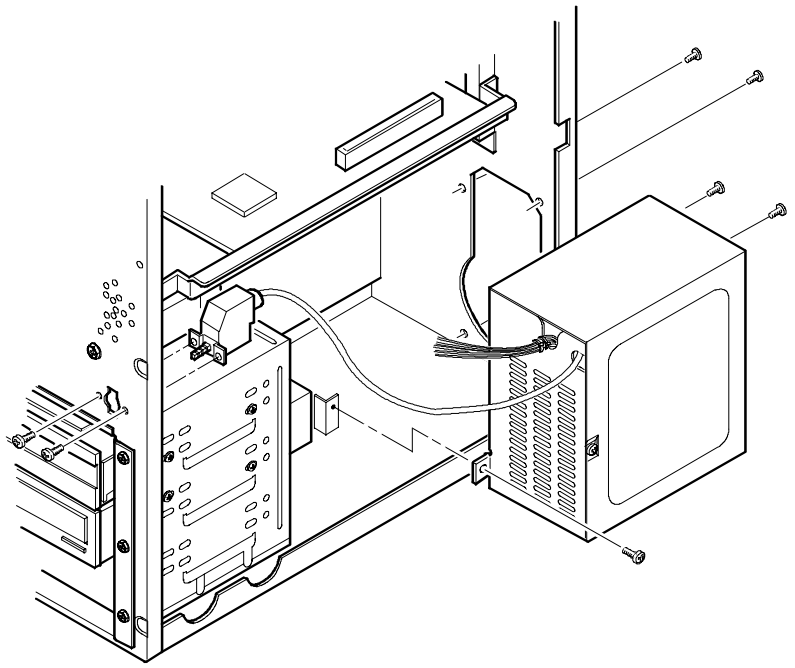

Figure 3 - 13 Removing the Power Supply

Removing 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) Remove cover.
4) Remove all expansion boards.
5) Remove screws securing bracket to front panel and expansion slot panel.
6) Carefully pull bracket and riser card from computer.

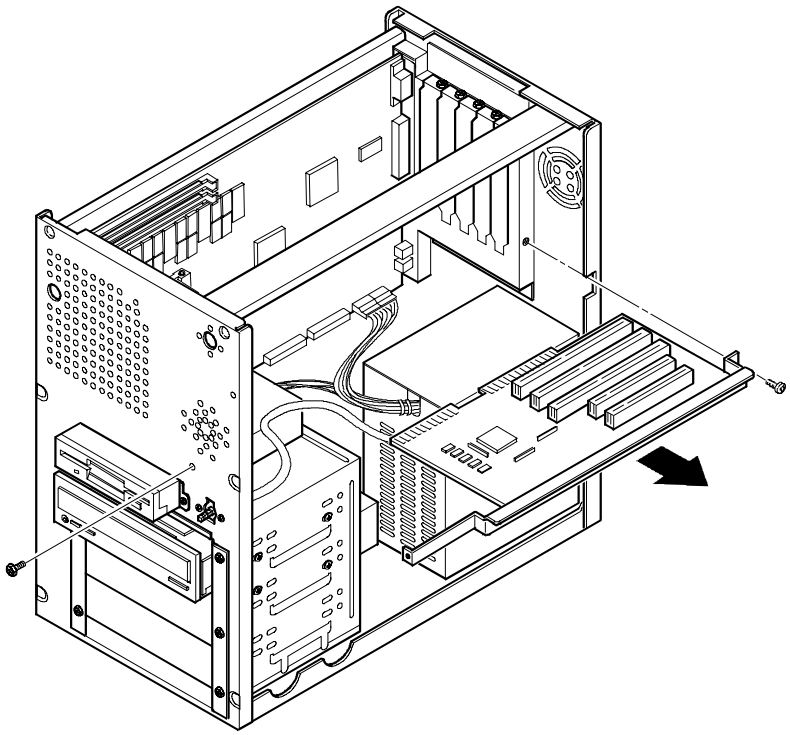

Figure 3 - 14 Removing Riser Card & Bracket

Installation Procedures

Installing External Cache Memory

STARION 400 computers do not ship with any external cache. However, 1 MB of external cache memory can optionally be installed using two 512 KB external cache modules. Note that two other upgrades are available for the STARION 400 computer: 256 KB (using two 128 KB external cache modules) and 512 KB (using two 256 KB external cache modules).

STARION 500 computers come with two 128 KB external cache modules installed at the factory. This amount can be increased up to 512 KB (using two 256 KB modules) or 1 MB (using two 512 KB modules). However, removing the existing 128 KB external cache modules will be necessary.

STARION 700 computers come with two 128 KB external cache modules installed at the factory. External cache cannot be upgraded.

To install a new external cache module:

1) Turn off the computer.
2) Disconnect external devices, ac power, and monitor power, and remove cover.
3) Remove old external cache module.
4) Install new external cache module.
5) Replace cover and connect external devices and restore power.
6) If necessary, run BIOS Setup utility and enable external cache option.

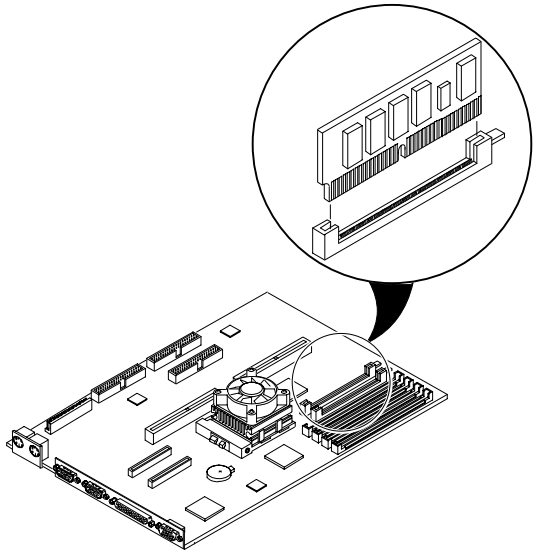

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Figure 3 - 15 Installing External Cache Memory

Installing a Higher Performance CPU

The **STARION 400/500** main logic board is equipped with an Intel Pentium 60 MHz processor installed in a ZIF socket.

The **STARION 700** main logic board is designed to operate with the 90 MHz Intel Pentiom processor installed in a ZIF socket.

To install a higher performance CPU:

1) Turn off the computer and disconnect external devices, ac power, and monitor power.
2) Remove cover.
3) If present, disconnect heat sync fan power connector.

NOTE CPU heat syncs vary in appearance. Some heat syncs have different types of cooling fins. Others might be equipped with a cooling fan assembly. As a result, the CPU heat sync configuration might vary from the one shown in the figure.

4) Remove heat sync and fan assembly from CPU by releasing plastic retaining clips (two at the top and two at the bottom).
5) Lift up on lever to release old CPU and remove old CPU.
6) Install new CPU. Make sure pin 1 on CPU is aligned with pin 1 on ZIF socket.
7) Return release lever to its original position and then set all appropriate CPU jumpers (see *"Main Logic Board Jumpers"*)
8) Replace cover and connect external devices and restore power.

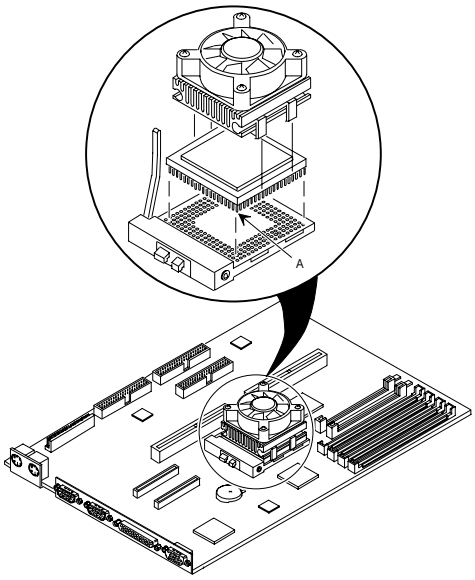


Figure 3 - 16 Installing a Higher Performance CPU

Installing Video Memory on the STARION 400/500

The **STARION 400/500** computer comes with a standard 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) Remove cover.
4) Remove upgrade chip from packaging and install in socket.
5) Replace cover.
6) Connect external devices and restore power.
7) Reboot the computer to configure it for additional video memory.

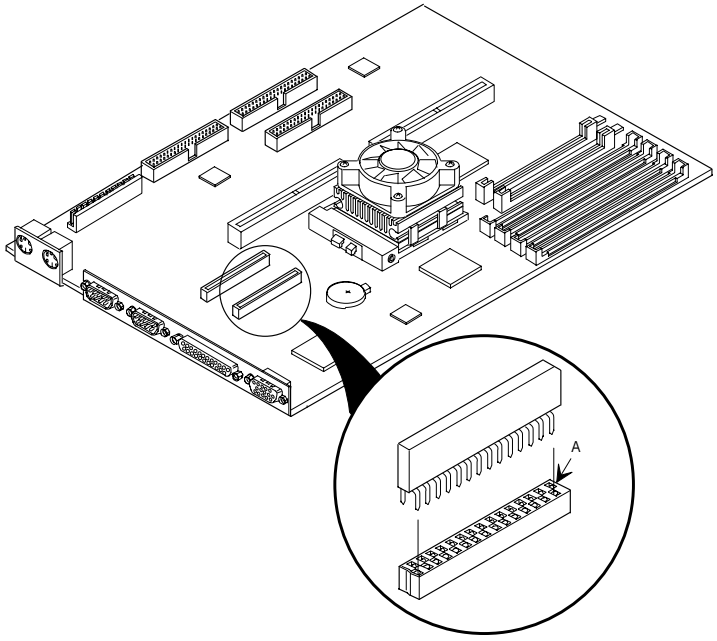


Figure 3 - 17 Installing Video Memory on the STARION 400/500

Installing Video Memory on the STARION 700

The **STARION 700** Computer comes with a standard 1 MB of video memory. This amount can be increased to 2 MB by installing an additional 1 MB of video memory. The additional video memory installs into sockets U2J1 and U3J1 on the main logic board. Each socket holds a 256 KB x 16, 70 ns (or faster), fast page-mode video DRAM chip. Note that both sockets must be filled.

To install the video memory upgrade chip:

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

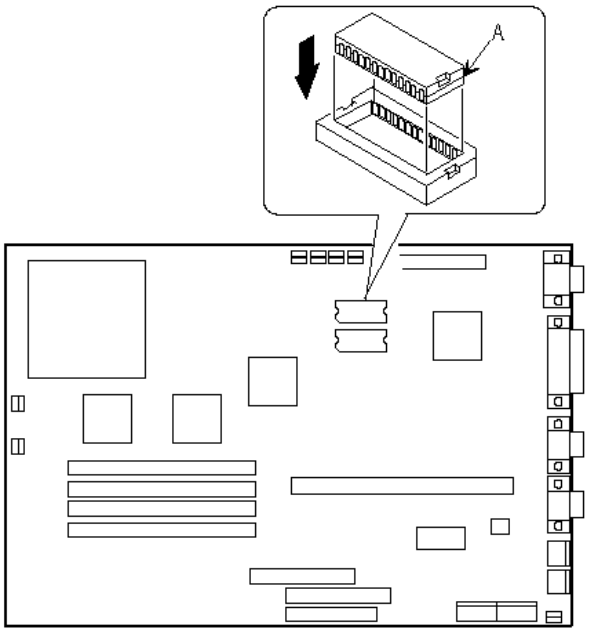


Figure 3 - 18 Installing Video Memory on the STARION 700

Replacing the Computer Battery

The **STARION 400/500** 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, replacement of the computers battery is necessary.

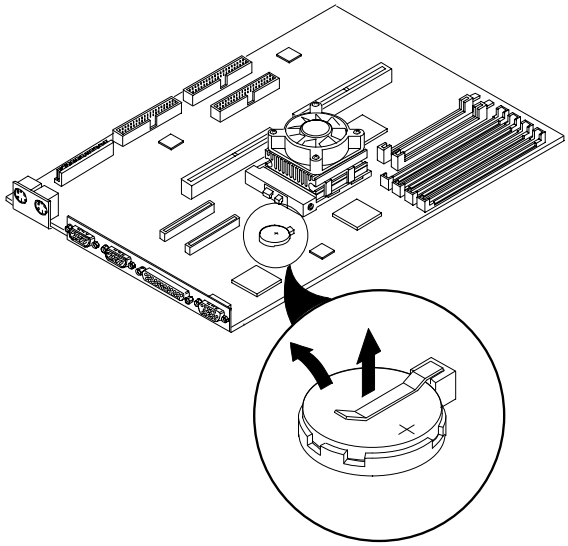
The **STARION 700** computer battery is integrated with the real-time clock (RTC)/CMOS RAM in a Dallas DS12887 device. This device is hardwired to the Main Logic Board.
If the computer ever fails to retain the correct date, time, or configuration settings when it is turned on, replacement of the computers battery is necessary.

To replace the STARION 400/500 battery, perform the following:

1) Record computer configuration settings using the BIOS Setup utility.
2) Turn off the computer , disconnect external devices, ac power and monitor power.
3) Remove cover.
4) Carefully lift up on retaining clip and remove old battery.
5) Install new battery, make sure **"+"** side faces up.
6) Replace cover, and connect external devices and restore power.
7) Run BIOS Setup utility to reconfigure computer using recorded configuration settings from step 1.

WARNING

Depending on your locality, the computers battery might be considered hazardous waste. Make sure to follow any state or local statute to properly dispose of the old battery.



DEC00427-4

Figure 3 - 19 Replacing the Computer Battery

Mass Storage Devices

The STARION 400/500/700 computer contains five mass storage device bays:

- The top device bay contains a factory installed 3½-inch diskette drive.
- The second device bay contains a factory installed tape backup drive.
- The third device bay contains a factory installed CD-ROM.
- The fourth device bay can hold a 5¼-inch half-height device. For example, a diskette drive or hard disk drive.
- The internal device bay is not accessible from the front of the computer and contains a factory installed, low-profile, 3½-inch hard disk drive.

The following procedures and illustrations show a base computer configuration. The specific drive bay configurations and storage devices might vary:

Connecting Diskette and IDE Devices

Refer to the specific data cable connection topics listed below for illustrations of the relevant connections.

To connect diskette and IDE devices, perform the following:

1) Connect supplied ribbon cable to device.
2) Connect a power cable to device.
3) Replace cover. Refer to "*Replacing and Locking the Cover"*, later in this chapter.
4) Connect external devices and restore power.
5) Run BIOS Setup utility to configure computer.

NOTE If only one IDE device is installed, make sure to use the ribbon cable connector furthest from the main logic board connector. Also, when having IDE devices installed in both internal drive bays, make sure that the ribbon cable has no twists between the two IDE drives.

Most cables and sockets are keyed so they cannot be connected backwards. If the cable or device is not keyed, pin 1 of cable must be connected 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 a number or symbol at one end of socket or with a number or symbol printed on circuit board near one end of socket. If necessary, refer to the device's documentation for pin 1 orientation.

Diskette and IDE Data Cable Connections

Legend	*Diskette Drive Component*
A	Power supply
B	Power connection
C	Diskette and tape drive connections
D	IDE and CD-ROM drive connections
E	Main logic board diskette drive connection
F	Main logic board IDE drive connection

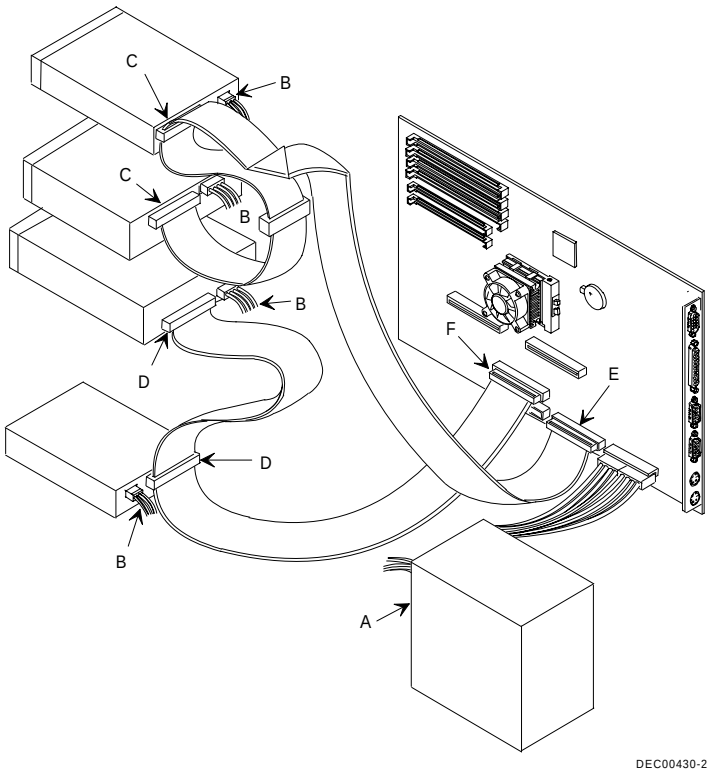


Figure 3 - 20 Diskette and IDE Data Cable Connections

Chapter 4 Troubleshooting

The following pages provide initial troubleshooting procedures and tables listing specific problems, possible causes, and recommended actions to take if the computer fails after it has been configured or after optional hardware or software is installed.
Refer to the documentation supplied with additional options when experiencing problems with specific installed options.

Initial Troubleshooting

Follow these general procedures to troubleshoot the STARION 400/500/700 computers:
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- Press [Ctrl] + [Alt] + [Del]. If the computer fails to boot, turn it off, wait until all hard disk drives spin down completely, and then turn it back on.
- If the POST detects an error, refer to *Chapter 4, "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.).

STARION 400/500 Beep Codes

Beep Code	*Error Message*
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

STARION 700 Beep Codes

Beep Code	*Error*
1	Refresh failure
2	Parity error
3	Base 64 KB memory failure
4	Timer not operational
5	Processor error
6	8042 - gate A20 failure
7	Processor exception interrupt error
8	Display memory read/write error
9	ROM checksum error
10	CMOS shutdown register read/write error
11	Cache error/external cache bad

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 the screen, the computer's speaker beeps twice. If an error occurs before the monitor is initialised, 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.

STARION 400/500 POST and Boot Messages

Message	*Description/Solution*
nnnn Cache SRAM Passed	Where nnnn is the amount of computer cache (in kilobytes) that tested successfully.
Diskette drive 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	Where nnnn is the amount of extended memory (in kilobytes) that tested successfully.
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.

STARION 400/500 POST and Boot Messages (continued)

Message	*Description/Solution*
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 real-time clock 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 computers 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.
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 computers 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 computers video BIOS was successfully copied to shadow RAM.

STARION 700 POST and Boot Messages

Message	*Description/Solution*
8042 gate - A20 error	Gate A20 on the keyboard controller (8042) is not working. Replace the keyboard controller.
Address line short!	Error in the address decoding circuitry on the main logic board.

STARION 700 POST and Boot Messages (continued)

Message	*Description/Solution*
Cache memory bad, do not enable cache!	Cache memory is defective.
CH-2 timer error	Most PC computers include two timers. Timer 2 is defective.
CMOS battery state low	CMOS RAM is powered by a battery. Battery power is low. Replace battery.
CMOS checksum failure	Checksum value different from current value. Run BIOS Setup utility.
CMOS system options not set	Values stored in CMOS RAM are corrupt or nonexistent. Run BIOS Setup utility.
CMOS display type mismatch	The graphics type in CMOS RAM does not match type detected by computer BIOS.
CMOS memory size mismatch	Main logic board memory different from amount detected by computer BIOS. Run BIOS Setup utility.
CMOS time and date not set	Run Setup utility and set current time and date.
Diskette boot failure	Boot diskette failed. Use another boot diskette.
Display switch not proper	Turn computer off and set proper display option (color or mono).
DMA error	Error in DMA controller.
DMA #1 error	Error in the first DMA channel.
DMA #2 error	Error in the second DMA channel.
FDD controller failure	Diskette controller failure. Power computer down and check all connections.
HDD controller failure	IDE controller failure. Power computer down and check all connections.
INTR #1 error	Interrupt channel 1 failed POST.
INTR #2 error	Interrupt channel 2 failed POST.
Invalid boot diskette	Try another boot diskette.
Keyboard is locked	Type in correct keyboard password.
Keyboard error	Run BIOS Setup utility and set correct keyboard option.
KB/interface error	Keyboard connector error.
Offboard parity error	Parity error in memory installed in an expansion board.
Onboard parity error	Parity error in main logic board memory.
Parity error ????	Parity error in main logic board memory at an unknown address.
Memory parity error at xxxx	Computer memory failed.
I/O card parity error	Expansion board memory failed.
DMA bus time-out	A device has driven the bus signal for more that 7.8 msec.

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. Refer to "*Utilities & Video 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 operates incorrectly after installing optional SIMMs	SIMMs installed incorrectly. Did not rerun BIOS Setup utility. BIOS Setup utility changes not saved before exiting. SIMMs have failed.	Remove SIMMs and reinstall. Rerun BIOS Setup utility. Rerun BIOS Setup utility and save changes. 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. External cache module has failed.	Remove external cache module and reinstall. Replace external cache module.

Computer Troubleshooting (continued)

Problem	*Possible Cause*	*Action*
Computer fails to retain setup information	Computer battery has failed.	Replace computer battery.
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***

Computer Troubleshooting (continued)

Problem	*Possible Cause*	*Action*
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.
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 are installed, the computer uses the IDE hard disk drive as the boot device.
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.
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.

Computer Troubleshooting (continued)

Problem	*Possible Cause*	*Action*
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. Diskette write protection is enabled.	Run the BIOS Setup utility and set the diskette controller to “Enabled”. Run the BIOS Setup utility and set the diskette write protection to “Disabled”.

Monitor Troubleshooting

Problem	*Possible Cause*	*Action*
Monitor power indicator is not on	Monitor is turned off. Power indicator is defective.	Turn on the monitor. Replace the failed component.
No screen display	Configuration error. Monitor brightness and contrast controls are incorrectly set.	Run the BIOS SETUP UTILITY to configure the computer for VGA operation. Set the jumper for VGA operation. Refer to *"Main Logic Board Jumpers"*. 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. Monitor signal cable incorrectly installed.	Adjust accordingly. Straighten any bent connector pins and then reconnect.
Color monitor displaying monochrome	Computer was turned on before the monitor was turned on. Video jumper incorrectly set.	Turn off the computer, turn on the monitor, then turn the computer back on. 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.

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

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 memoryMemory space gap	ISA memory upper limit
16 MB to 128 MB	Main memory	Computer memory upper limit
128 MB to 4 GB	PCI memory	

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

Computer Interrupt Levels

Interrupt Number	*Interrupt Source*
IRQ1	Keyboard controller
IRQ2	Cascade interrupt
IRQ3	COM2, COM4 (if enabled)
IRQ4	COM1, COM3-Modem
IRQ5	Sound card function
IRQ6	Diskette drive
IRQ7	LPT1
IRQ8	RTC
IRQ9	Available for optional video card or PCI device
IRQ10	Recommended alternate for COM3 or PCI device
IRQ11	Recommended for network card or PCI device
IRQ12	Mouse port (onboard)
IRQ13	Math Co-processor
IRQ14	IDE primary
IRQ15	IDE secondary (if enabled)

DMA Channel Assignment

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

PCI Configure Space Address Map

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

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 and Sequential write/random read **(Destructive Tests !!)**)
- 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
- OS/2 version 3.0
- SCO UNIX Version 3.2.4.2
- Windows NT
- SCO Open Server Enterprise System Version 3.0
- SCO Open Server Network System Version 3.0

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

When completed carefully clean outside of unit with cleaning solution.

Appendix A Services Notes

This appendix contains the current *Service Notes* for the *STARION 400/500/700* product line

Appendix B Useful Information

Related documentation

Document Titles	*Order's*
STARION 400/500/700 Quick Service Guide	EK-A0855.A01
STARION 400/500/700 Quick Setup	ER-902AA-IA.A01 (English)
STARION 400/500 User's Guide	ER-902AA-UA.A01 (English)
STARION 700 User's Guide Supplement	ER-903AA-UA.A01 (English)
SMM Spares Parts Catalogue STARION PC Family	EK-A0860-SV

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: **1-508-496-8800**

- ***CompuServe***
  Digital hosts a number of conferences on Compuserve featuring a wide range of topics.
  Enter **GO DEC** to reach Digital's main menu page.
  For information on PC integration, enter: **GO DEC PC**

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Digital Equipment Parts Center b.v.
Att: MCS Logistics Engineering Call Desk
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:

Phone: xx31-24-3529666

Fax: xx31-24-3563106

Personal Notes

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READERS COMMENTS

Digital STARION 400/500/700 Service Maintenance Manual
EK-A0850-SV Rev A01

This form is for documents only. Commitments submitted on this form are used at Digital's direction.
Did you find errors in this manual? If so, specify by page.

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What is your general reaction to this manual (format, completeness, organisation etc.)?

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Is the documentation understandable, usable, and sufficient for your needs? What material is missing?

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