TOSHIBA

Toshiba Satellite 110 Series Maintenance Manual

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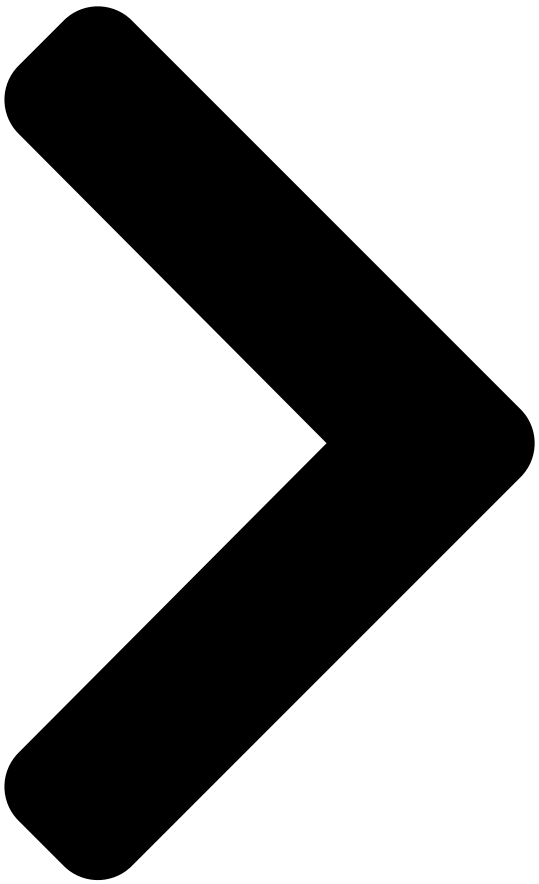

1.1
Features

The 110 series computer is one of the lightest and most advanced portable computers available. Utilizing advanced technology and high-speed components, the computer offers multimedia functions, excellent display legibility, battery operation, and IBM PC/AT com-
patibility. The unit's features are:

Microprocessor

A Pentium processor with Voltage Reduction Technology (VRT) that operates at 100 MHz and 3.3/2.9 volts.

Memory

Standard with 8 MB of CMOS RAM. This includes 640 KB of conventional memory and 7360 KB of extended memory.

Hard Disk Drive (HDD)

An internal 810 million byte (772 MB) HDD.

Floppy Disk Drive (FDD)

A 3.5-inch FDD supports 2HD (1.44 MB) floppy disks and 2DD (720 KB) floppy disks.

Display

The 110CS has an 11.3-inch Dual-scan Supertwist Nematic (DSTN) color LCD with 800 x 600 pixels. The 110CT has an 11.3-inch Thin-Film Transistor (TFT) color LCD with 800 x 600 pixels. The built-in display controller supports 640 x 480 resolution with 16M colors capability and up to 1024 x 768 resolution with 256 colors on an external CRT.

Keyboard

An easy-to-use 82/84-key keyboard provides a numeric keypad overlay for fast numeric data entry or for cursor and page control. The keyboard supports software that uses a 101- or 102-key enhanced keyboard.

Batteries

Three different batteries: main battery, backup battery (for memory backup), and Real Time Clock (RTC) battery.

Next Page

Related Manuals for Toshiba Satellite 110 Series

Laptop Toshiba Satellite 110 Series User Manual

Toshiba satellite 110 series laptops user’s guide (438 pages)

Laptop Toshiba Satellite 110CS Specification Sheet

Satellite 110 series (2 pages)

Laptop Toshiba Satellite 110CS Brochure

Toshiba satellite 110cs: product brochure (2 pages)

Laptop Toshiba 1100-S101 User Manual

1100-s101 user's guide (244 pages)

Laptop Toshiba 1105 User Manual

1105 user's guide (242 pages)

Laptop TOSHIBA Satellite 1100 User Manual

Toshiba satellite portable personal computer (103 pages)

Laptop Toshiba libretto 110CT Brochure

Toshiba libretto 110ct: product brochure (2 pages)

Laptop Toshiba Satellite 1130 Series User Manual

Toshiba notebook computer user's guide (244 pages)

Laptop Toshiba Satellite 1135-S1553 Specifications

Satellite 1135 series (8 pages)

Laptop Toshiba Satellite 1130-S155 Specifications

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Laptop Toshiba Satellite 1135-S125 Specifications

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Laptop Toshiba Satellite 1135-S155 Specifications

Satellite 1135 series (8 pages)

Laptop Toshiba Satellite 1110-S153 Specification Sheet

Satellite 1110 series (10 pages)

Laptop TOSHIBA Satellite 1130 User Manual

Toshiba satellite portable personal computer (188 pages)

Laptop Toshiba Satellite 1130 Series Manual

Field replaceable unit documentation (9 pages)

Laptop Toshiba Satellite CL10-C Series User Manual

(126 pages)

Summary of Contents for Toshiba Satellite 110 Series

Page 1 Features The 110 series computer is one of the lightest and most advanced portable computers avail- able. Utilizing advanced technology and high-speed components, the computer offers multimedia functions, excellent display legibility, battery operation, and IBM PC/AT com- patibility. The unit's features are: Microprocessor A Pentium processor with Voltage Reduction Technology (VRT) that operates at 100 MHz and 3.3/2.9 volts.

Page 2 Expansion Memory Slot An optional 8, 16, or 32 MB memory module can be installed in the memory slot. Parallel Port This port can be used to connect a Centronics compatible printer or other parallel device. The port supports ECP (Extended Capabilities Port) conforming to IEEE·1284.

Page 3 The 110 Series Personal Computer is shown in Figure 1-1. Figure 1-1 110 series personal computer The system configuration is shown in Figure 1-2. Figure 1-2 System unit configuration 110 Series...

Page 4 System Unit Block Diagram Figure 1-3 is a block diagram of the system unit. Figure 1-3 System board block diagram 110 Series...

Page 5 The system board's major components are: Microprocessor • One Pentium processor with VRT 64-bit microprocessor • The Pentium processor operates at 100 MHz and 3.3/2.9 volts • The math co-processor and 16 KB cache memory are integrated into the Pentium Standard RAM •...

Page 6 One Super Integration (SI) Contains the following components: • Two DMACs .... 82C37 equivalent • Two PICs ....82C59 equivalent • Two SIOs ....16550 equivalent (One SIO is not used) • Two UART ....16550 equivalent • One PIT..... 82C54 equivalent •...

Page 7 PC Card Controller Gate Array (PCMCIA-GA) This gate array's functions: • PCMCIA memory card control • PCMCIA I/O card control I/O Controller Gate Array (IOCNT-GA) This gate array's functions: • Internal Communication controller - KBC, main CPU communication register file - KBC interrupt controller - KBC communication controller C bus control (Not used)

Page 8 3.5-Inch Floppy Disk Drive The 3.5-inch Floppy Disk Drive (FDD) is a thin, high-performance reliable drive that sup- ports 720-KB (formatted) 2DD and 1.44-MB (formatted) 2HD 3.5-inch floppy disks. The FDD is shown in Figure 1-4. Figure 1-4 3.5-inch FDD Table 1-1 lists the FDD specifications.

Page 9 The computer supports the 720 MB HDD. The HDD is shown in Figure 1-5. Figure 1-5 2.5-inch HDD Table 1-2 lists the HDD specifications. Table 1-2 2.5-inch HDD specifications Item Toshiba MK1926FCV IBM DBOA-20810 Formatted capacity (bytes) 814,915,584 812,851,200 Disks...

Page 10 Keyboard The 82- (USA) or 84- (European) keyboard is mounted on the computer’s system unit. The keyboard is connected to the keyboard controller on the system board through a 25-pin flat cable. The computer pointer control stick, located in the center of the keyboard, provides convenient control of the cursor without requiring desk space for a mouse.

Page 11 DSTN Color LCD (110CS) The 110CS has a DSTN Color Liquid Crystal Display (LCD), which contains an LCD mod- ule, a Fluorescent Lamp (FL), and an FL inverter board. 1.6.1 DSTN Color LCD Module The DSTN color LCD is backlit and supports 800 x 600 pixels with a video controller. This controller includes the functions of Video Graphics Array (VGA) and Super VGA (SVGA) for external display.

Page 12 1.6.2 DSTN Color FL Inverter Board The FL inverter board supplies high frequency current to light the LCD’s fluorescent lamp. Table 1-4 lists the FL inverter board's specifications. Table 1-4 DSTN color FL inverter board specifications (110CS) Item Specifications Input Voltage (V) Power 4.25...

Page 13 TFT Color LCD (110CT) The 110CT has a TFT Color Liquid Crystal Display (LCD), which contains an LCD module, a Fluorescent Lamp (FL), and an FL inverter board. 1.7.1 TFT Color LCD Module The TFT color LCD is backlit and supports 800 x 600 pixels with built-in display controller. This controller includes the functions of VGA and SVGA for external display.

Page 14 1.7.2 TFT Color FL Inverter Board The FL inverter board supplies high frequency current to light the LCD’s Fluorescent Lamp. Table 1-6 lists the FL inverter board's specifications. Table 1-6 TFT color FL inverter board specifications (110CT) Item Specifications Input Voltage (V) Power 4.25...

Page 15 Power Supply The power supply provides five kinds of voltages to the system board. The power supply has one microprocessor and it operates at 500 KHz. It contains the following functions: 1. Determines if the AC cable or battery is connected to the computer. 2.

Page 16 Batteries The computer has three types of batteries: Main battery pack Backup battery Real Time Clock (RTC) battery The removable main battery pack is the computer's main power source when the AC adapter is not attached. The backup and main batteries maintain the

state of the computer when AutoResume is enabled.

Page 17 Battery Charging Control Battery charging is controlled by a power supply microprocessor that is mounted on the power supply. The microprocessor controls whether the charge is on or off and detects a full charge when the AC power cord and battery are attached to the computer. The system charges the battery using quick charge or trickle charge.

Page 18 1.9.2 Backup Battery The backup battery maintains data for AutoResume. The power source used to back up the AutoResume data is determined according to the following priority: AC power > Main battery > Backup battery The backup battery is charged by the main battery or AC power cord. Table 1-10 shows the backup battery's charging time and data preservation period.

Page 19 You will need the following tools to implement the troubleshooting procedures: Diagnostics Disk Phillips screwdrivers (M2 and M3) Toshiba MS-DOS system disks (You must install the following onto the disk: SYS.COM, FORMAT.COM, FDISK.COM and FDISK.EXE.) 2DD or 2HD formatted work disk for floppy disk drive testing...

Page 20 (F31PRT), then turn the power switch on. The computer will override the password function by erasing the current password. Verify with the customer that Toshiba MS-DOS is installed on the hard disk drive. Non-Toshiba operating systems can cause the computer to malfunction.

Page 21 Figure 2-1 Troubleshooting flowchart (1/2) 110 Series...

Page 22 Figure 2-1 Troubleshooting flowchart (2/2) 110 Series...

Page 23 Power Supply Troubleshooting The power supply controls many functions and components in the computer. To determine if the power supply is functioning properly, start with Procedure 1 and continue with the other Procedures as instructed. The procedures described in this section are: Procedure 1: AC IN Icon Check Procedure 2:...

Page 24 Procedure 2 Error Code Check If the microprocessor detects a malfunction, the AC IN icon blinks orange. The blink pattern indicates an error code as shown below. Start Off for 2 seconds Error code (4 bit) “1” On for 1 second “0”...

Page 25 Check 2 For error code 9h: Make sure the PS/2 mouse or keyboard is not connected. If connected, turn off the power and disconnect it. Connect the AC cord to the computer and turn on the power. If the error still exists, go to Procedure 3. Check 3 For error code Ah: Make sure the battery pack is correctly installed in the computer.

Page 26 Check 6 For error code Fh: Disconnect the AC cord and remove the main battery pack from the computer. Check the main battery pack model name. If a nonstandard pack is in- stalled, replace it with a standard model. If the error still exists, go to Procedure 3. Check 7 For any other error, go to Procedure 3.

Page 27 Check 5 Install a new battery pack. If the Battery icon still does not glow, go to Proce- dure 4. Procedure 4 AC PS Unit Replacement Check The system board incorporates the power supply. Power is supplied to the system board through the AC IN plug located on the AC PS unit.

Page 28 If an error message displays on the screen, perform Check 1. If there is no error message, go to Procedure 2. If the Toshiba MS-DOS is properly loaded, go to Procedure 3. Check 1 If one of the following error messages displays on the screen, press the F1 key as the message instructs.

Page 29 Check 2 If the following error message displays on the screen, then data stored in RAM under the Resume function is lost because the battery has become discharged or the system board is damaged. Press any key as the message instructs. Go to Procedure 3.

Page 30 Procedure 2 Printer Port LED Check on Boot Mode The printer port LED displays the IRT status and test status by turning lights on and off as an eight-digit binary value for Boot mode. Figure 2-2 shows the printer port LED. Figure 2-2 Printer port LED To use the printer port

LED, follow these steps: Turn the computer on, then set to Boot mode.

Page 31 Table 2-1 Printer port LED Boot mode status (1/2) LED status Test item Message ROM checksum test BIOS is damaged! KBC initialization — Special register initialization — PIT test PIT ERROR PIT initialization — PIT function check MEMORY REFRESH ERROR TIMER CH.2 OUT ERROR CMOS check CMOS CHECKSUM ERROR...

Page 32 Table 2-1 Printer port LED Boot mode status (2/2) LED status Test item Message Initialization of expansion ROM — Password check — Setup boot check *** Bad xxxx xxxx *** Check system. Then press [F1] key. Boot load — Check 1 If any of the following error codes display, go to Procedure 5.

Page 33 Procedure 3 Printer Port LED Check on Resume Mode The printer port LED displays the IRT status and test status by turning lights on and off as an eight-digit binary value for Resume mode. To use the printer port LED, follow these steps: Turn the computer on;...

Page 34 Procedure 4 Diagnostic Test Program Execution Check Execute the following tests from the Diagnostic Test Menu. Refer to Chapter 3, Tests and Diagnostics, for more information on how to perform these tests. System Test Memory Test Printer Test Async Test Real Timer Test Expansion Test If an error is detected during these tests, go to Procedure 5.

Page 35 FDD head cleaning is one option available in the Diagnostics Program. For detailed opera- tion, see Chapter 3, Tests and Diagnostics. After Toshiba MS-DOS loads, run the Diagnostics Program. Then clean the FDD heads using the cleaning kit. If the FDD still does not function properly, go to Procedure 2.

Page 36 Diagnostic Test Program Execution Check The Floppy Disk Drive Diagnostic Test Program is stored on the Diagnostics Disk. After loading Toshiba MS-DOS, run the Diagnostics Program. Refer to Chapter 3, Tests and Diagnostics, for more information about the diagnostics test procedures.

Page 37 Procedure 3 Connector Check and Replacement Check The 3.5-inch Floppy Disk Drive is connected to the system board by a flexible cable. This cable may be damaged or disconnected from the 3.5-inch FDD port. Perform the following checks: Check 1 Make sure the flexible cable is firmly connected to the 3.5-inch FDD.

Page 38 User’s Manual for more information about how to perform BACKUP. Procedure 1 Partition Check Insert the Toshiba MS-DOS system disk, turn on the computer, and perform the following checks: Type C: and press Enter. If you cannot change to drive C, go to Check 2. If you Check 1 can change to drive C, go to Procedure 2.

Page 39 Non-System disk or disk error Replace and press any key Check 3 Using the Toshiba MS-DOS system disk, install a system program on the hard disk drive using the SYS command. If the following message appears on the display, the system program has been transferred to the HDD.

Page 40 HDD. If the following message appears on the display, the HDD is formatted. Format complete If any other error message appears on the display, refer to the Toshiba MS-DOS Manual for more information and perform Check 2. Check 2 Using the Diagnostics Disk, format the HDD with a low level format option.

Page 41 Procedure 4 Diagnostic Test Program Execution Check The HDD test program is stored on the Diagnostics Disk. Perform all of the HDD tests in the Hard Disk Test. Refer to Chapter 3, Tests and Diagnostics, for more information about the HDD test program.

Page 42 Keyboard Troubleshooting To determine if the keyboard is functioning properly, perform the following procedures. Start with Procedure 1 and continue with Procedure 2 as instructed. Procedure 1: Diagnostic Test Program Execution Check Procedure 2: Connector and Replacement Check Procedure 1 Diagnostic Test Program Execution Check Execute the Keyboard Test in the Diagnostics Program.

Page 43 Diagnostic Test Program Execution Check The Display Test program is stored on the computer Diagnostics Disk. This program checks the display controller on the system board. After loading Toshiba MS-DOS, run the Diag- nostics Program. Refer to Chapter 3, Tests and

Diagnostics, for details.

Page 44 Procedure 4 Connector Check The Display unit has an LCD module, FL, Display switch, and FL inverter board. The FL and FL inverter board are connected by two cables. The LCD module and system board are connected by two signal cables as shown below. Any of these cables may be disconnected. Disassemble the display unit and check the following cable connections.

Page 45 Procedure 5 Replacement Check The FL, FL inverter board, LCD module, and system board are connected to the display circuits. Any of these components may be damaged. Refer to Chapter 4, Replacement Procedures, for instructions on how to disassemble the computer. Perform the following checks: If the FL does not light, perform Check 1.

Page 46 2-28 110 Series...

Page 47 The Diagnostic Test This chapter explains how to use the Diagnostic Test Program to test the functions of the computer's hardware modules. The Diagnostics Program is stored on the Diagnostics Disk and consists of 11 programs that are grouped into the Service Program Module (Diagnostics Menu) and the Test Program Module (Diagnostic Test Menu).

Page 48 To perform some of the Diagnostic Test functions, you will need the following equipment. Diagnostics Disk (All tests) Formatted working disk for the Floppy Disk Test 3.5-inch 2HD/2DD disk for internal 3.5-inch FDD Cleaning kit to clean the floppy disk drive heads (Head cleaning) PC card wraparound card for the I/O card test (Expansion Test) Printer wraparound connector for the printer wraparound test (Printer Test) RS-232-C wraparound connector for the RS-232-C port wraparound test (Async Test)

Page 49 Executing the Diagnostic Test Running diagnostics requires Toshiba MS-DOS. To start the Diagnostic Test programs, follow these steps: Insert the Diagnostics Disk in the floppy disk drive and turn on the computer. The Diagnostics Menu displays: TOSHIBA personal computer xxx DIAGNOSTICS version X.XX (c) copyright TOSHIBA Corp.

Page 50 To execute the Diagnostic Test Menu from the Diagnostics Menu, set the high- light bar to 1, and press Enter. The following Diagnostic Test Menu appears: TOSHIBA personal computer xxx DIAGNOSTICS version X.XX (c) copyright TOSHIBA Corp. 19XX DIAGNOSTIC TEST MENU : 1 - SYSTEM TEST...

Page 51 Select the desired subtest number from the subtest menu and press Enter. The following message appears: TEST LOOP Selecting YES increases the pass counter by one each time the test cycle ends and also restarts the test cycle. Selecting NO returns the subtest menu to the Diagnostic Test Menu after the test is complete.

Page 52 Subtest Names Table 3-1 lists the subtest names for each test program in the Diagnostic Test Menu. Table 3-1 Diagnostic Test Menu's subtest names (1/2) Test no. Test name Subtest no. Subtest item SYSTEM ROM checksum Thermistor check MEMORY RAM constant data RAM address pattern data RAM refresh Protected mode...

Page 53 Table 3-1 Diagnostic Test Menu's subtest names (2/2) Test no. Test name Subtest no. Subtest item ASYNC Wraparound (board) Board (#1) <=> board (#2) (Not used) Point to point (send) Point to point (receive) Interrupt test Sequential read Address uniqueness Random address/data Cross talk &...

Page 54 System Test To execute the System Test, select 1 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. Move the highlight bar to the subtest you want to ex- ecute and press Enter. Subtest 01 ROM Checksum Tests the system board from address F0000h to FFFFFh (64 KB).

Page 55 Memory Test To execute the Memory Test, select 2 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. Move the highlight bar to the subtest you want to ex- ecute and press Enter. Subtest 01 RAM Constant Data (Real Mode) Writes a 256-byte unit of constant data to conventional memory (0 to 640 KB), then reads the data and compares the result with the original data.

Page 56 Subtest 05 Memory Module NOTE: To execute this subtest, an optional memory card

must be installed in the computer. Functions the same as Subtest 04, except it is used for testing an optional memory card. Memory module capacity is 8 MB, 16 MB, and 32 MB. After selecting Subtest 05, the following message appears: Extended memory size (1:8 MB,2:16 MB,3:32 MB)? Select the number that corresponds to the memory card installed in the com-...

Page 57 Keyboard Test To execute the Keyboard Test, select 3 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. The Keyboard Test contains four subtests that test the computer's keyboard actions. Move the highlight bar to the subtest you want to execute and press Enter.

Page 58 Subtest 02 Pressed Key Code Display When a key is pressed, the scan code, character code, and keytop name dis- play on the screen in the format shown below. The Ins, Caps Lock, Num Lock, Scroll Lock, Alt, Ctrl, Left Shift, and Right Shift keys display in Reverse Screen mode when pressed.

Page 59 Subtest 04 Pointing Stick Checks the functions of the pointing stick as shown below. a) IPS stick pressure sensing direction and parameter. b) IPS switch function check. This test reports the pointing stick motion response from the IPS and IPS switch.

Page 60 Display Test To execute the Display Test, select 4 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. The Display Test contains eleven subtests that test the computer's display in various modes. Move the highlight bar to the subtest you want to execute and press Enter.

Page 61 After pressing Enter, 16 colors or 16 levels of gray of mode 13h appear in the 320 x 200 graphics mode, as shown below: 320*200 GRAPHICS DISPLAY [13] BLACK BLUE GREEN CYAN MAGENTA BROWN WHITE GRAY LIGHT BLUE LIGHT GREEN LIGHT CYAN LIGHT RED...

Page 62 Subtest 04 80 x 25/30 Character Display (Mode 3, 12) Displays the character string shifting one character to the right, line by line, in the 80 x 25 and 80 x 30 character modes as shown below. 80*XX CHARACTER DISPLAY 012345678901234567890123456789012345678901234567890123456789012345678901234567 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_'abcdefghijklm !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_'abcdefghijklmn...

Page 63 Subtest 06 640 x 200 Graphics Display (Mode 6, E) Displays even dots, odd dots, and all dots in the 640 x 200 dot graphics mode 6 and E, as shown below: 640*200 GRAPHICS DISPLAY : [X] EVEN DOTS ODD DOTS ALL DOTS DRIVEN DRIVEN...

Page 64 Subtest 08 Display Page Confirms that the pages can be changed in order from page 0 through page 7 in 40 x 25 character mode. DISPLAY PAGE 0 0000000000000000000000000000000000000000 0000000000000000000000000000000000000000 Pressing Ctrl + Break exits this subtest, after completion of the test, and returns to the Display Test Menu.

Page 65 If an external CRT display is connected to the computer, choose 1 to display the following message: [Border color test (7 times press [Enter] key] Press Enter to execute the border color test. To exit this subtest and return to the Display Test Menu, press Ctrl + Break.

Page 66 Floppy Disk Test NOTE: Before running the Floppy Disk Test, prepare a formatted work disk. Remove the Diagnostics Disk and insert a work disk into the FDD. The contents of the floppy disk will be erased. To execute the Floppy Disk Test, select 5 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen.

Page 67 Subtest 01 Sequential Read Performs a Cyclic Redundancy Check (CRC) that continuously reads all the tracks on a floppy disk. The following tracks are read according to the media type in the floppy disk drive: Double-sided, double-density (2D): Tracks 0 to 39. Double-sided, double-density, double-track (2DD), and double-sided, high-density, double-track (2HD): Tracks 0 to 79.

Page 68 Printer Test To execute the Printer Test, select 6 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. The Printer Test contains three subtests that test the output of the printer connected to the computer. Move the highlight bar to the subtest you want to execute and press Enter.

Page 69 Subtest 02 Function For IBM compatible printers, tests the following functions: Normal print Double width print Compressed print Emphasized print Double strike print All characters print Prints the various print types shown below: PRINTER TEST THIS LINE SHOWS NORMAL PRINT. 2.

Page 70 3.10 Async Test To execute the Async Test, select 7 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. The Async Test contains five subtests that test the computer's asynchronous communication functions. Move the highlight bar to the subtest you want to execute and press Enter.

Page 71 Subtest 03 Point to Point (Send) NOTE: To execute this subtest, two machines must be connected with an RS-232-C direct cable. One machine should be set as "send" (Subtest 03) and the other set as "receive" (Subtest 04). The wiring diagram for the RS-232-C direct cable is described in Appendix F.

Page 72 This should be done with the BACKUP command in the Toshiba Companion Utility. Do not use the MS-DOS BACKUP command. After the Hard Disk Test is completed, execute the Toshiba MS-DOS FDISK command, which will set the partition. Then execute the Toshiba MS-DOS FORMAT command.

Page 73: Table Of Contents

The Hard Disk Test message appears after you respond to the Detail Status prompt. Select the number of the subtest you want to execute and press Enter. The following message appears during each subtest. HARD DISK TEST XXXXXXX SUB-TEST : XX PASS COUNT: XXXXX ERROR COUNT: XXXXX WRITE DATA: XX...

Page 74 Subtest 04 Cross Talk & Peak Shift Writes eight types of worst pattern data (shown below) to a cylinder, then reads the data while moving from cylinder to cylinder. Worst pattern data Cylinder 'B5ADAD' 0 cylinder '4A5252' 1 cylinder 'EB6DB6' 2 cylinder '149249'...

Page 75 3.12 Real Timer Test To execute the Real Timer Test, select 9 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. The Real Timer Test contains three subtests that test the computer's real timer functions. Move the highlight bar to the subtest you want to execute and press Enter.

Page 76 Subtest 03 Real Time Carry NOTE: When this subtest is executed, the current date and time are erased. Checks the real time clock increments, making sure the date and time display in the following format: Current date 12-31-1994 Current time 23:59:58 Pressing Enter displays the following: Current date...

Page 77 3.13 NDP Test To execute the NDP Test, select 10 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. The NDP Test contains one subtest that tests the NDP (Numeric Data Processor) functions. Subtest 01 Checks the following functions of the math co-processor: Control word Status word...

Page 78 3.14 Expansion Test To execute the Expansion Test, select 11 from the Diagnostic Test Menu, press Enter, and follow the directions on the screen. The Expansion Test contains two subtests. NOTE: To execute this subtest, the PC card wraparound card is required. Subtest 01 PCMCIA Wraparound (Internal) Checks the following signal line of the PC card slot:...

Page 79 3.15 Diagnostic Test Error Codes and Status Names Table 3-2 lists the error codes and status names for the Diagnostic Test. Table 3-2 Diagnostic Test error codes and status names (1/2) Device name Error code Error status name (COMMON) Data Compare Error SYSTEM ROM Checksum Error Memory...

Page 80 Table 3-2 Diagnostic Test error codes and status names (2/2) Device name Error code Error status name ASYNC (cont.) Framing Error Overrun Error Line Status Error Modem Status Error Bad Command Error Address Mark Not Found Record Not Found HDC Not Reset Error Drive Not Initialized HDC Overrun (DRQ) DMA Boundary Error...

Page 81: Hard Disk Test

3.16 Hard Disk Test Detail Status When an error occurs in the Hard Disk Test, the following message displays: HDC status = XXXXXXXX Detailed information about the Hard Disk Test error

displays on the screen by an eight-digit number. The first four digits represent the hard disk controller (HDC) error status number; the last four digits are not used.

Page 82 Table 3-4 Hard disk controller error register contents Name Description BBK1 “0” Other. (Bad block “1” A bad block mark is detected. mark) “0” There is no uncorrectable data error. (Uncorrectable) “1” Uncorrectable data error has been detected. —— Not used. IDNF “0”...

Page 83 CAUTION: The contents of the hard disk drive will be erased when this program is executed. Before executing the function, transfer the contents of the hard disk drive to floppy disks. Use BACKUP in the Toshiba Companion Utility. Do not use the MS-DOS BACKUP Command. See the Toshiba MS-DOS manual for details.

Page 84 NOTE: After the HDD has been formatted, execute the Toshiba MS-DOS FDISK command to partition the HDD. Next, execute the Toshiba MS-DOS FORMAT com- mand. Refer to the Toshiba MS-DOS manual for more information about using these commands. Selecting Test 2 and pressing Enter in the Diagnostics Menu displays the following mes- sages: DIAGNOSTICS - HARD DISK FORMAT : VX.XX...

Page 85 The following selections also appear at the bottom of the screen in succession: Drive number Drive number select (1:#1,2:#2) ? Select a drive number and press Enter. Interleave number Interleave number (1/1 ~ 8) ? Select an interleave number (1 ~ 8) and press Enter. Pressing only Enter selects 1.

Page 86: Sub-Test

Good Track FORMAT If a good track has been erroneously formatted as a bad track, you can use this subtest to reformat the track as a good track. To format a track as a good track, enter the number for drive, interleave, cylinder, and head as indicated in the screen prompt shown below.

Page 87 3.18 Head Cleaning 3.18.1 Function Description This function cleans the heads in the FDD by executing a series of head load/seek and read operations. A cleaning kit is necessary to perform this program. 3.18.2 Operations Selecting Test 4 from the Diagnostics Menu and pressing Enter displays the following messages: DIAGNOSTICS - FLOPPY DISK HEAD CLEANING : VX.XX Mount cleaning disk(s) on drive(s).

Page 88: Pass Count

3.19 Log Utilities 3.19.1 Function Description This function logs error information generated while a test is in progress and stores the results in RAM. This function can store data on a floppy disk or output the data to a printer. If the power switch is turned off, the error information will be lost.

Page 89 The error information on the screen can be manipulated using the following number keys: The 1 key scrolls the display to the next page. The 2 key scrolls the display to the previous page. The 3 key returns to the Diagnostics Menu. The 4 key erases all error log information in RAM.

Page 90 3.20 Running Test 3.20.1 Function Description This function automatically executes the following tests in sequence: System Test (Subtest 01) Memory Test (Subtests 01, 02, 04, 06) Display Test (Subtests 01 through 08) FDD Test (Subtest 02) HDD Test (Subtests 01, 05) Real Timer Test (Subtest 02) Printer Test (Subtest 03) Async Test (Subtest 01)

Page 91 Select Y or N and press Enter. The following message appears : Mount the work disk(s) on the drive(s), then press [Enter] key. [Warning : The contents of the disk(s), will be destroyed.] This program is executed continuously. To terminate the program, press Ctrl + Break.

Page 92 FORMAT NOTE: This program is only for testing a floppy disk drive. The option is different from the Toshiba MS-DOS FORMAT command. Formats a 5.25-inch or 3.5-inch floppy disk in the following formats: 2D: Double-sided, double-density, 48/67.5 TPI, MFM mode, 512 bytes, 9 sectors/track.

Page 93 FORMAT Program Selecting FORMAT displays the following message: DIAGNOSTICS - FLOPPY DISK FORMAT : VX.XX Drive number select (1:A, 2:B) ? Select a drive number to display the following message: Type select (0:2DD-2DD,1:2D-2D,2:2D-2HD,3:2HD-2HD) Select a

media/drive type number and press Enter. A message similar to the one below displays: Warning : Disk data will be destroyed.

Page 94 Selecting a media/drive type number displays a message similar to the one below: Insert source disk into drive A: Press any key when ready. Remove the Diagnostics Disk from the FDD, insert the source disk, and press any key. The following message appears, indicating the program has started.

Page 95 Insert a source disk and press any key. The following message appears: —— Max. address —— [Track] = 0079 [Head] = 01 [Sector] = 09 Track number ?? Set the track number you want to dump. The system will access the disk and dump a list.

Page 96 3.22 System Configuration 3.22.1 Function Description The System Configuration program contains the following configuration information for the computer: BIOS ROM version Boot ROM version KBC version PS Micom Version Base memory size Number of floppy disk drives Number of Async ports Number of hard disk drives Number of printer ports Extended Memory Size...

Page 97 3.23 SETUP 3.23.1 Function Description This program displays the current system setup information as listed below: Memory Total Base Extended Memory Shadow BIOS ROM Display Display Adapter LCD Display Mode VGA Segment Address LCD Display Colors Power On Display Text Mode Stretch Hard Disk HDD Mode Password...

Page 98 3.23.2 Accessing the SETUP Program Selecting 0 from the Diagnostics Menu and pressing Enter displays the following: SYSTEM SETUP BIOS version = x.xx MEMORY I/O PORTS Total = 8192 KB Serial Port COM1(IRQ4/3F8H) Base 640 KB Parallel Port LPT1 (378H) Extended = 7360 KB OTHERS...

Page 99 If the changed item requires the system to reboot, the following message displays: Are you sure? (Y/N) The changes you made cause the system to reboot. To make other changes, press N. Repeat the steps above. To accept the changes, press Y. NOTE: You can press Esc to quit at any time without saving changes.

Page 100 Extended Displays the amount of extended memory the computer has available. Shadow BIOS ROM Displays 192 KB of RAM, which is reserved for the Shadow BIOS ROM. Display This group of options helps you configure the computer’s display. Display Adapter Displays the internal controller for the VGA internal display.

Page 101 DSTN Display (110CS) 222K colors Displays 256 out of 226,981 colors. 4096 colors Displays 256 out of 4096 colors. NOTE: If DSTN screen flickers with an LCD Display Colors setting of 222K Colors, select 4096 Colors. Power On Display This option is used to select the display when booting up. Internal/External Selects an external CRT if one is connected, other- wise it selects the internal LCD.

Page 102 To see the capacity of the hard disk drive, use the CHKDSK command. See your OS documentation for details on using CHKDSK. NOTE: Formats for Enhanced IDE and Standard IDE are different. There- fore, if you change the setting, you will need to reformat the hard disk drive for the appropriate setting.

Page 103 When you select one of the above options, except for Not used, a sub- window similar to the one below appears to let you set the parallel port mode. The options for this setting are ECP (default) and Std. Bi-Direc- tional.

Page 104 Battery Save Mode This option is used to select Full Power, Low Power, or User Setting of the BATTERY SAVE OPTION. Full Power The following shows full power settings. BATTERY SAVE OPTIONS Processing Speed High CPU Sleep Mode Disabled Display Auto Off 30 Min.

Page 105 Battery Save Options The following set of options can be selected in the submenu of User Setting, which is one of the Battery Save Mode options. Processing Speed Changes the CPU processing speed. High CPU operates at 100 MHz. (Default) CPU operates at low speed.

Page 106 System Auto Off Use this option to enable or disable the system automatic off function in Resume mode when you are working in DOS. In Boot mode, it is disabled and does

not display. Disabled Disables system automatic power off. xx Min.

Page 107 When Alarm Volume is selected, the subwindow below displays to let you enable or disable certain functions. ALARM VOLUME OPTIONS LOW BATTERY Alarm Enable Panel Close Alarm Enable Enabled Enables the feature. (Default) Disabled Disables the feature. System Beep Enables or disables the system beep. Enabled Enables the feature.

Page 108 00:00:00 Sets the power on time (24-hour clock). Disabled Disables the alarm. NOTE: When using this feature, do not remove the AC cable and battery pack at the same time. If you do so, the setting will be lost. You must reset this option when you restore power. Keyboard This option lets you change the keyboard layout and set the Fn key equiva- lent when you are using an external keyboard.

Page 109 Pointing Devices Enables or disables the AccuPoint. Auto selected The AccuPoint is disabled when a PS/2 mouse or serial mouse is connected; otherwise the AccuPoint is enabled. (Default) Simultaneous If a PS/2 mouse or serial mouse is connected to an optional port replicator, both the AccuPoint and the external mouse are enabled.

Page 110 3-64 110 Series...

Page 111 General This section explains how to disassemble the computer and replace Field Replaceable Units (FRUs). It may not be necessary to remove all the FRUs in order to replace one. The chart below is a guide to which FRUs need to be removed in order to remove others. Always start by removing the battery pack, then follow the lines on the chart to determine which FRU you must remove next in order to repair the one you think is causing the computer to operate improperly.

Page 112 Always use the nickel metal hydride (NiMH) battery pack or backup battery that is authorized by Toshiba or compatible with the unit. Since other battery packs have different specifications, they may be incompatible with the unit and may burst or explode.

Page 113 Before You Begin Look over the procedures in this section before you begin disassembling the computer. Familiarize yourself with the disassembly and reassembly steps. Begin each procedure by removing the AC adapter and the battery pack as instructed in Section 4.2, Battery Pack. Do not disassemble the computer unless it is operating abnormally.

Page 114 Disassembly Procedures The computer has two basic types of cable connectors: Pressure Plate Connectors Normal Pin Connectors To disconnect a Pressure Plate connector, lift up the tabs on either side of the plastic pressure plate and slide the cable out of the connector. To connect the cable to a Pressure Plate connector, make sure the pressure plate is fully lifted and slide the cable into the connector.

Page 115 Tools and Equipment The use of ElectroStatic Discharge (ESD) equipment is very important for your safety and the safety of those around you. Proper use of these devices will increase the success rate of your repairs and lower the cost for damaged or destroyed parts. The following equipment is necessary to disassemble and reassemble the computer: One M2 Phillips screwdriver to remove and replace screws.

Page 116 Pull back the battery latch and lift out the battery pack. Figure 4-2 Removing the battery pack NOTE: For environmental reasons, do not throw away a spent battery pack. Please return spent battery packs to your Toshiba dealer. 110 Series...

Page 117 WARNING: The battery is a nickel metal hydride battery and should be replaced only by your dealer or by a Toshiba service representative. The battery can explode if not properly replaced, used, handled, or disposed of. Dispose of the battery as required by local ordinances or regulations.

Page 118 Optional PC Card Removing an Optional PC Card To remove an optional PC card, make sure the computer is in Boot mode. Then follow the steps below and refer to Figure 4-4. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer.

Page 119 Installing an Optional PC Card To install an optional PC card, follow the steps below and refer to Figure 4-5. NOTE: Before you install the PC card, make sure the computer is in Boot

mode. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer.

Page 120 Optional Memory Module Removing an Optional Memory Module To remove an optional memory module, make sure the computer is in Boot mode then follow the steps below and refer to Figures 4-6 and 4-7. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer.

Page 121 Installing an Optional Memory Module To install an optional memory module, make sure the computer is in Boot mode. Then follow the steps below and refer to Figures 4-6 to 4-8. Position the connector on the bottom of the module over the corresponding connector on the computer (align the holes on the side of the module over the screw holes on the brace).

Page 122 Hard Disk Drive (HDD) Removing the HDD To remove the HDD, follow the steps below and refer to Figures 4-9 and 4-10. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer. Remove the battery pack, optional PC card and optional memory module as described in Sections 4.2, 4.3, and 4.4.

Page 123 Remove four M3x4 flat-head screws securing the frame to the HDD and separate the HDD from the frame. Figure 4-10 Removing the HDD from the frame Installing the HDD To install the HDD, follow the steps below and refer to Figures 4-9 and 4-10. Secure the HDD frame to the HDD with four M3x4 flat-head screws.

Page 124 Keyboard Removing the Keyboard To remove the keyboard, follow the steps below and refer to Figures 4-11 to 4-13. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer. Remove the battery pack, optional PC card, optional memory module, and HDD as described in Sections 4.2 through 4.5.

Page 125 Remove five M2.5x6 screws securing the metal cover and lift out the cover. Figure 4-12 Removing the metal cover Disconnect the keyboard cable from PJ13 on the system board and lift out the keyboard. Figure 4-13 Removing the keyboard 4-15 110 Series...

Page 126 Installing the Keyboard To install the keyboard, follow the steps below and refer to Figures 4-11 to 4-14. Connect the keyboard cable to PJ13 on the system board. Make sure the cable connection is secure in the pressure plate. Fit the two tabs of the metal cover into the top cover and backup battery base (Figure 4-14).

Page 127 Disconnect the sub-battery from PJ503 and remove it. WARNING: If you replace the sub-battery, be sure to use only batteries recommended by Toshiba. Installation of the wrong battery can cause the battery to explode or otherwise cause damage. Figure 4-15 Removing the sub-battery...

Page 128 Disconnect the VGA board from system board connector PJ16. Figure 4-16 Disconnecting the VGA board Rotate the board out and disconnect the VGA cable from PJ302 on the VGA board. For the 110CT with TFT, also disconnect it from PJ303 (the 110CS with DSTN does not use PJ303).

Page 129 Installing the Sub-battery and VGA Board To install the sub-battery and VGA board, follow the steps below and refer to Figures 4-15 to 4-18. Connect the VGA cable to PJ302 on the VGA board. For the 110CT with TFT, also connect it to PJ303 (the 110CS with DSTN does not use PJ303). Make sure the ferrite core is seated properly.

Page 130 RTC Battery and Top Cover with Display Assembly Removing the RTC Battery and Top Cover with Display Assembly To remove the RTC battery and top cover with display assembly, follow the steps below and refer to Figures 4-19 to 4-21. Turn the computer off.

Page 131 WARNING: If you replace the RTC battery, be sure to use only batteries recommended by Toshiba. Installation of the wrong battery can cause the battery to explode or otherwise cause damage. Figure 4-20 Removing the RTC battery Disconnect the panel sensor close cable from PJ10.

Page 132 Release two latches at the back of the computer and lift up the top cover with display assembly. Start above the ports on the left side and work to the right. Figure 4-21 Removing the top cover with display assembly Installing the RTC Battery and Top Cover with

Display Assembly To install the RTC battery and top cover with display assembly, follow the steps below and refer to Figures 4-19 to 4-22.

Page 133 Connect the Real Time Clock battery cable to PJ3 on the system board. Use a multimeter to measure the TP1 (+) and ground voltage according to the following value. +2V to 4V If the voltage is too low, replace the RTC battery with a new one. Figure 4-22 Measuring the voltage at TP1 Turn the computer upside down and secure three M2.5x8 silver screws and four M2.5x6 screws (Figure 4-19).

Page 134 Floppy Disk Drive (FDD) Removing the FDD To remove the FDD, follow the steps below and refer to Figures 4-23 and 4-24. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer. Remove the battery pack, optional PC card, optional memory module, HDD, keyboard, sub-battery, VGA board, RTC battery, and top cover with display assembly as described in Sections 4.2 through 4.8.

Page 135 Remove four M2x2 screws securing the frame to the FDD and lift off the frame. Remove the tape and disconnect the flexible cable from the drive. Figure 4-24 Removing the FDD frame Installing the FDD To install the FDD, follow the steps below and refer to Figures 4-23 and 4-24. Connect the flexible cable to the FDD and secure it with tape.

Page 136 4.10 HDD Interface Board and Membrane Switch Removing the HDD Interface Board and Membrane Switch To remove the HDD interface board and membrane switch, follow the steps below and refer to Figures 4-25 and 4-26. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer.

Page 137 Pull off the tape securing the membrane switch. The membrane switch is held in place by plastic pins. Carefully lift the membrane switch clear of pins to remove it. Figure 4-26 Removing the membrane switch Installing the HDD Interface Board and Membrane Switch To install the HDD interface board and membrane switch, follow the steps below and refer to Figures 4-25 and 4-26.

Page 138 4.11 AC Power Supply Unit Removing the AC PS Unit To remove the AC PS unit, follow the steps below and refer to Figures 4-27 and 4-28. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer.

Page 139 Lift the power cord socket straight up until it clears its slots and remove the AC PS unit. Figure 4-28 Removing the holder assembly and power cord socket Installing the AC PS Unit To install the AC PS unit, follow the steps below and refer to Figures 4-27 and 4-28. Seat the power cord socket with the side with markings facing up.

Page 140 4.12 System Board Removing the System Board To remove the system board, follow the steps below and refer to Figure 4-29. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer. Remove the battery pack, optional PC card, optional memory module, HDD, keyboard, sub-battery, VGA board, top cover with display assembly, RTC battery, FDD, HDD interface board, and AC PS unit as described in Sections 4.2 through 4.11.

Page 141 Installing the System Board To install the system board, follow the steps below and refer to Figure 4-29. Seat the system board. First set the edge along the computer port side, then lay the board into place. Seat the AC PS unit support and secure seven M2.5x6 screws. Seat the battery terminal cover and secure it with one M2.5x6 screw.

Page 142 4.13 Display Mask Removing the Display Mask To remove the display mask, follow the steps below and refer to Figures 4-30 and 4-31. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer. Remove the battery pack, optional PC card and optional memory module as described in Sections 4.2, 4.3, and 4.4.

Page 143 Carefully insert your fingers between the mask and the LCD panel and pry open the latches. Start with the four latches across the bottom of the display mask. Continue unlatching the mask along the sides (four latches on each side) and at the top (four latches).

Page 144 4.14 Fluorescent Lamp (FL) Inverter Board (110CT with TFT) Removing the FL Inverter Board To remove the FL inverter board, follow the steps below and refer to Figure 4-32. Turn the computer off. Disconnect the AC power cable and all external cables connected to the

computer.

Page 145 Installing the FL Inverter Board To install the FL inverter board, follow the steps below and refer to Figure 4-32. Seat the FL inverter board. Connect the FL inverter cable to CN1 and the FL cable to CN2 on the FL inverter board.

Page 146 4.15 Fluorescent Lamp (FL) Inverter Board (110CS with DSTN) Removing the FL Inverter Board To remove the FL inverter board, follow the steps below and refer to Figure 4-33. Turn the computer off. Disconnect the AC power cable and all external cables connected to the computer.

Page 147 Figure 4-33 Removing the FL inverter board (110CS with DSTN) Installing the FL Inverter Board To install the FL inverter board, follow the steps below and refer to Figure 4-33. Connect the contrast control cable to PJ1 on the contrast control board. Seat the contrast control board.

Page 148 4.16 Liquid Crystal Display (LCD) Module (110CT with TFT) Removing the LCD Module To remove the LCD module, follow the steps below and refer to Figures 4-34 and 4-35. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer.

Page 149 Disconnect the display flexible cable from the display unit and disconnect four display cables from PJ2, PJ3, PJ4, and PJ5 on the flexible cable. Remove the shielded tape securing the display cables to the LCD cover. Figure 4-35 Removing the LCD module (110CT with TFT) Installing the LCD Module To install the LCD module, follow the steps below and refer to Figures 4-34 and 4-35.

Page 150 4.17 Liquid Crystal Display (LCD) Module (110CS with DSTN) Removing the LCD Module To remove the LCD module, follow the steps below and refer to Figures 4-36 and 4-37. Turn the computer off. Disconnect the AC power cord and all external cables connected to the computer.

Page 151 Remove the shielded tape securing the display cables to the LCD cover. Figure 4-37 Removing the LCD module (110CS with DSTN) Installing the LCD Module To install the LCD module, follow the steps below and refer to Figures 4-36 and 4-37. Secure the display cable to LCD cover with shielded tape.

Page 152 4.18 Fluorescent Lamp (FL) (110CT with TFT) CAUTION: When you remove the FL, be careful not to let any dust or other foreign matter contaminate the LCD panel. Any contamination can affect the performance of the unit. Removing the FL To remove the FL, follow the steps below and refer to Figure 4-38.

Page 153 Installing the FL To install the FL, follow the steps below and refer to Figure 4-38. Place the FL in the frame. Lift up the plastic film to route the FL cable. Seat the metal FL cover. Secure the metal FL cover with two M2x6 silver screws and an inch screw. Install the LCD module, FL inverter board, display mask, optional PC card, optional memory module, and the battery pack as described in Sections 4.16, 4.14, 4.13, 4.4, 4.3, and 4.2.

Page 154 4.19 Fluorescent Lamp (FL) (110CS with DSTN) CAUTION: When you remove the FL, be careful not to let any dust or other foreign matter enter the LCD panel components. Any contamination can affect the performance of the unit. Removing the FL To remove the FL, follow the steps below.

Page 155 Lift the end of the reflector sheet covering the FL and lift out the FL. Be careful not to pull or apply tension to the reflector sheet. Figure 4-40 Removing the FL (110CS with DSTN) Installing the FL To install the FL, follow the steps below and refer to Figures 4-39 and 4-40. Seat the FL, gently press it securely in place and cover it with the end of the reflector sheet.

Page 156 4-46 110 Series...

Page 157 Appendix A Handling the LCD Module Precautions for Handling the LCD Module The computer's LCD module can be easily damaged during assembly or disassembly. Therefore, please observe the following precautions when handling the LCD module. When installing the LCD module in the LCD cover, be sure to seat it so that it is properly aligned and maximum

visibility of the display is maintained.

Page 158 If the panel’s surface gets dirty, wipe it with cotton or a soft cloth. If it is still dirty, try breathing on the surface to create a light condensate and wipe it again. If the surface is very dirty, we recommend a CRT cleaning agent. Apply the agent to a cloth and then wipe the panel’s surface.

Page 159 CMOS-LSI circuits are used in the module, so guard against damage from electro-static discharge. Be sure to wear a wrist or ankle ground when handling the module. Do not expose the module to direct sunlight or strong ultraviolet rays for long periods.

Page 160 Do not disassemble the LCD module. Disassembly can cause malfunctions. If you transport the module, do not use packing material that contains epoxy resin (amine) or silicon glue (alcohol or oxime). These materials can release gas that can damage the panel's polarization. 110 Series...

Page 161 Appendix B Board Layouts System Board Front View Figure B-1 System board layout (front) 110 Series...

Page 162 System Board Back View Figure B-2 System board layout (back) 110 Series...

Page 163 Table B-1 System board ICs and connectors (front) Mark Number Name System Clock IC11 RTC Controller IC14 BIOS ROM IC19 Async Controller IC20 Keyboard Controller IC24 IPS Controller PRT/RGB I/F Connector FDD Connector HDD I/F Connector IPS Connector Async I/F Connector P-REP Connector PJ10 Panel Sensor Connector...

Page 164 110 Series...

Page 165 Appendix C Pin Assignments PJ1 Thermistor Connector (3-pin) Table C-1 Thermistor connector pin assignments (3-pin) Pin No. Signal name Pin No. Signal Name ACPUTH PJ2 Expansion Memory Connector (140-pin) Table C-2 Expansion memory connector pin assignments (140-pin) (1/3) Pin No. Signal name Pin No.

Page 166 Table C-2 Expansion memory connector pin assignments (140-pin) (2/3) Pin No. Signal name Pin No. Signal Name HD02;100 HD06;100 HD03;100 HD05;100 HD02;100 HD06;100 HD03;100 HD07;100 HD08;100 HD12;100 HD09;100 HD13;100 HD10;100 HD14;100 HD11;100 HD15;100 HD48;100 HD52;100 HD49;100 HD53;100 HD50;100 HD54;100 HD51;100 HD55;100 HD56;100 HD60;100...

Page 167 Table C-2 Expansion memory connector pin assignments (140-pin) (3/3) Pin No. Signal name Pin No. Signal Name MA00;101 MA01;101 MA02;101 MA03;101 MA04;101 MA05;101 MA07;101 MA06;101 MA09;101 MA08;101 MA11;101 MA10;101 PJ3 NiMH RTC Battery Connector (3-pin) Table C-3 NiMH RTC battery connector pin assignments (3-pin) Pin No.

Page 168 PJ4 PRT/RGB I/F Connector (30-pin) Table C-4 PRT/RGB I/F connector pin assignments (30-pin) Pin No. Signal name Pin No. Signal Name AGREEN;100 ARED;100 ABLUE;100 CRTEN;000 CHSYNC;110 CVSYNC;110 CVSYNC;100 CHSYNC;100 ERROR;000 PD3;100 SELCT;100 PD2;100 PE;100 PD1;100 BUSY;100 PD0;100 ACK;000 STROB;000 SLIN;000 PD4;100 PINT;000 PD5;100...

Page 169 PJ7 HDD Connector (90-pin) Table C-6 HDD connector pin assignments (90-pin) (1/2) Pin No. Signal name Pin No. Signal Name IRQ14;100 SA02;100 SA01;100 IRQ7;100 IRQ5;100 CSPTON;000 FIORD;000 FIOWR;000 IOCS16;000 IOCRDY;100 HDCS0;000 HDCS1;000 PSPNBP;100 HDDLED;000 SD00;100 SD01;100 SD02;100 SD03;100 SD04;100 SD05;100 SD06;100 SD07;100 SD15;100...

Page 170 Table C-6 HDD connector pin assignments (90-pin) (2/2) Pin No. Signal name Pin No. Signal Name RVCC PJ8 Asynchronous Connector (9-pin) Table C-7 Asynchronous connector pin assignments (9-pin) Pin No. Signal name Pin No. Signal Name DCD1;101 RXD1;001 TXD1;011 DTR1;111 —...

Page 171 PJ9 P-REP Connector (176-pin) Table C-8 P-REP connector pin assignments (176-pin) (1/3) Pin No. Signal name Pin No. Signal Name LA23;110 LA20;110 FRESET;010 SBHE;010 MERD;010 ZEROWS;010 IOCRDY;110 BUFOFF;020 PSPTON;010 DTR1;110 TXD1;010 DCD1;100

CTS1;100 SYSCLK;100 IORD;010 IRQ7;110 IRQ9;110 IRQ12;110 ERROR;000 PE;100 ACK;000 PINT;000 STROB;000...

Page 172 Table C-8 P-REP connector pin assignments (176-pin) (2/3) Pin No. Signal name Pin No. Signal Name IRQ10;110 IRQ14;110 SELCT;100 BUSY;100 SLIN;000 AUTFD;000 PD0;100 PD2;100 PD4;100 PD6;100 PD7;100 CHSYNC;120 CVSYNC;120 P12V SA00;110 SA08;110 SA02;110 SA04;110 SA10;110 SA06;110 SA15;110 SA18;110 SA13;110 SD07;110 SA16;110 SD05;110 SD03;110...

Page 173 Table C-8 P-REP connector pin assignments (176-pin) (3/3) Pin No. Signal name Pin No. Signal Name SD02;110 SD08;110 SD10;110 SD01;110 SD12;110 SD14;110 PRDT1;000 EXKBDT;100 EXKBCK;100 JOYR;000 LOUTLM LOURLP PJ10 Panel Sensor Connector (2-pin) Table C-9 Panel sensor connector pin assignments (2-pin) Pin No.

Page 174 C.11 PJ13 Keyboard Connector (25-pin) Table C-11 Keyboard connector pin assignments (25-pin) Pin No. Signal name Pin No. Signal Name KBRT6;100 KBRT2;100 KBRT5;100 KBRT0;100 KBRT1;100 KBRT3;100 KBRT7;100 KBRT4;100 KBOT02;000 KBOT09;000 KBOT11;000 KBOT03;000 KBOT04;000 KBOT05;000 KBOT06;000 KBOT07;000 KBOT08;000 KBOT01;000 KBOT00;000 IPSY;100 –...

Page 175 C.13 PJ15 PC Card Connector (140-pin) Table C-13 PC card connector pin assignments (140-pin) (1/2) Pin No. Signal name Pin No. Signal Name — — — — — — CDA2;000 SDB2;000 WPA;100 WPB;100 CDA10;100 CDB10;100 CDA02;100 CDB02;100 CDA09;100 CDB09;100 CDA01;100 CDB01;100 CDA08;100 CDB08;100...

Page 176 Table C-13 PC card connector pin assignments (140-pin) (2/2) Pin No. Signal name Pin No. Signal Name MCVCCA MCVCCB CADA21;100 CADB21;100 BSYA;000 BSYB;000 CADA20;100 CADB20;100 WEA;000 WEB;000 CADA19;100 CADB19;100 CADA14;100 CADB14;100 CADA18;100 CADB15;100 CADA13;100 CADB13;100 CADA17;100 CADB17;100 CADA08;100 CADB08;100 IOWA;000 CADB09;100 CADA09;100 CADB09;100...

Page 177 C.14 PJ16 VGA Connector (120-pin) Table C-14 VGA connector pin assignments (120-pin) (1/2) Pin No. Signal name Pin No. Signal Name P12V BE3;000 BE2;000 ADS;000 RDYVLI;000 FLHIGH CFLPWR FLV0 RDYVLO;000 CSVLBI;000 CLKVLO;100 FLV1 WR;000 RSTVGA;000 PDNVGA;000 D23;100 CLKVGA;100 D22;100 D21;100 RESET;000 D20;100 PANEL1;100...

Page 178 Table C-14 VGA connector pin assignments (120-pin) (2/2) Pin No. Signal name Pin No. Signal Name A18;100 A19;100 D12;100 A20;100 D13;100 D14;100 A03;100 D15;100 A04;100 A05;100 D04;100 A12;100 D03;100 D02;100 A13;100 D01;100 A14;100 A15;100 D00;100 A23;100 D07;100 D06;100 A24;100 D05;100 A25;100 A22;100 CHSYNC;100...

Page 179 Appendix D Keyboard Scan/Character Codes Table D-1 Scan codes (set 1 and set 2) (1/3) Code set 1 Code set 2 Keytop Make Break Make Break Note ‘ ~ 7 & BkSp 29 (42) Caps Lock 110 Series...

Page 180 Table D-1 Scan codes (set 1 and set 2) (2/3) Code set 1 Code set 2 Keytop Make Break Make Break Note ‘ “ Enter Shift (L) No.102 key , < . > Shift (R) Ctrl Alt (L) Space ALT (R) E0 F0 11 E0 F0 70 E0 F0 71...

Page 181 Table D-1 Scan codes (set 1 and set 2) (3/3) Code set 1 Code set 2 Keytop Make Break Make Break Note PrintSc Pause — — — — Notes: *1: Scan codes differ by mode. *2: Scan codes differ by overlay function. *3 Combination with Fn key makes different codes.

Page 182 Table D-2 Scan codes with left Shift key Code set 1 Code set 2 Make Break Make Break E0 AA E0 52 E0 D2 E0 2A E0 F0 12 E0 70 E0 F0 70 E0 12 E0 AA E0 53 E0 D3 E0 2A E0 F0 12 E0 71 E0 F0 71 E0 12...

Page 183 Table D-4 Scan codes with Fn key Code set 1 Code set 2 Keytop Make Break Make Break CTRL LALT ARROW NUMERIC Table D-5 Scan codes in Overlay mode Code set 1 Code set 2 Keytop Make Break Make Break (•) (–) Table D-6 Scan codes with Ctrl key...

Page 184 110 Series...

Page 185 Appendix E Key Layouts United States (US) Keyboard Figure E-1 US keyboard United Kingdom (UK) Keyboard Figure E-2 UK keyboard 110 Series...

Page 186 German (GR) Keyboard Figure E-3 GR keyboard French (FR) Keyboard Figure E-4 FR keyboard 110 Series...

Page 187 Spanish (SP) Keyboard Figure E-5 SP keyboard Italian (IT) Keyboard Figure E-6 IT keyboard 110 Series...

Page 188 Scandinavian (SC) Keyboard Figure E-7 SC keyboard Swiss-German (SL) Keyboard Figure E-8 SL keyboard 110 Series...

Page 189 Appendix F Wiring Diagrams Printer Wraparound Connector (9) +PD7 (15) –ERROR (8) +PD6 (14) –AUTFD (7) +PD5 (13) +SELECT (6) +PD4 (16) –PINIT (5) +PD3 –STROBE (10) –ACK (4) +PD2 (12) (3) +PD1 (17) –SLIN (2) +PD0 (11) +BUSY Figure F-1 Printer wraparound connector RS-232-C Wraparound Connector (3) TD (7) RTS...

Page 190 RS-232-C Direct Cable (9-Pin to 25-Pin) (1) CD (2) RD (3) TD (4) DTR (22) (5) GND (7) RTS (6) DSR (20) (8) CTS (9) RI Figure F-4 RS-232-C direct cable (9-pin to 25-pin) 110 Series...

Page 191 Appendix G BIOS Rewrite Procedures This appendix explains how to rewrite the system BIOS program when you update the system BIOS. Tools To rewrite the BIOS, you need the following tool: The Diagnostics Disk for the 110 series. Rewriting the BIOS Set the system to Boot mode.

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This manual is also suitable for:

Satellite 110csSatellite 110ct