SP5233XS

Quick Reference Guide

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Chapter 1—Introduction

The Cubix Density Series system houses multiple server-class Intel® compatible computers neatly and efficiently in a single, rack-mountable drawer (Figure 1). The Density Series is designed for the purpose of computer consolidation. Cubix equipment solves the problems associated with space-contained backroom computing centers.

The SP5233XS is a processor board which can plug into any of the passive backplanes for the Density system. There are three steps to insure proper installation of this board. Switch settings must be checked for proper configuration, a power down of the group where the board will be installed must be done and the board must be inserted into the proper group slot. This Quick Reference Guide provides details on switch and jumper settings, the steps necessary for proper installation of the board and information regarding the technical specifications of the SP5233XS board.

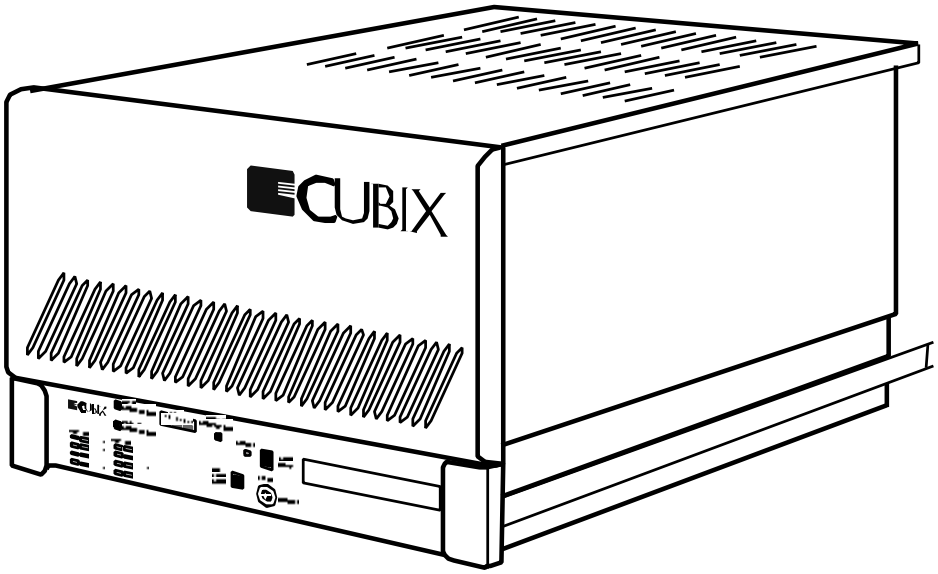

Figure 1 Density Series System

Overview

The type of backplane that has been installed determines the number of SP5233XS computers that can be installed. A maximum number of eight SP5233XS processor boards can be inserted on the 8X2 SP Density Series backplane. (Other backplane options are available.) Figure 2 shows the board layout for the SP5233XS series.

Once installed in a Cubix Density System, each SP Series board becomes an independent computer. The system multiplexor allows all SP Series computers in a chassis (or multiple chassis) to share a single floppy disk and CD-ROM drive. The monitor, mouse and keyboard may be shared between multiple chassis (up to eight chassis).

SP Series computers include on-board video, two serial ports, one parallel port, keyboard and mouse support, memory, floppy and EIDE hard-drive support. Also included is an integrated Ethernet controller with a 10/100 Base-T connector, and an Ultra Fast/ Wide 40MB SCSI controller with a single-ended SCSI connector.

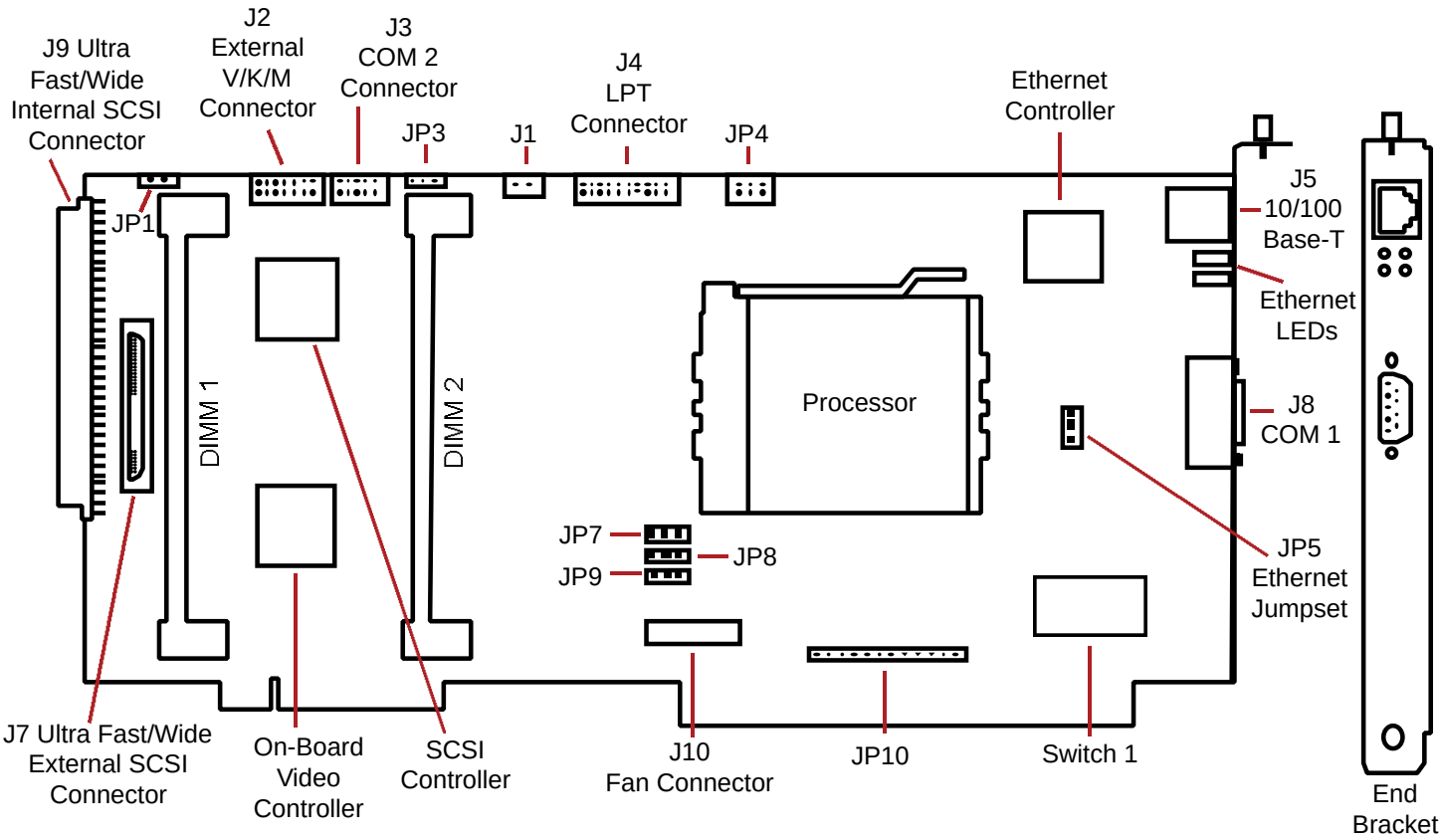

Figure 2 SP5233XS Series Board Layout & End Bracket

Switch One (S1) Settings

S1—Position 1

The IES (Intelligent Environmental Sensor) module in the Density Series system communicates with the processors in the system via a hardware interrupt which is IRQ 10. The supervisory interrupt is set with S1 position 1 (see Figure 2 for location). If the SP5233XS board is part of the GlobalVision network, supervisory interrupt is necessary and IRQ must be enabled., ***i.e.***, position 1 should be in the “on” position. If the processor board is not part of the GlobalVision network, IRQ is in the “off” position. (The “on” or “off” positions are designated by an arrow clearly marked on the switch.)

S1—Positions 2 and 4

S1, position 2 is hardware interrupt IRQ 15 and is not available in Density Systems and should always remain in the “off” position. Position 4 is also unavailable in Density Systems, and should remain in the “off” position.

S1—Positions 3

The SP5233XS supports a PS/2 style mouse via a connection with the Density Series miltiplexer. If a mouse is not used, the interrupt required can be disabled by setting SI, position 3 in the “off” position.

Table 1 defines the switch positions for S1.

Table 1 S1 Switch Settings

Function	1	2	3	4
Supervisory Interrupt IRQ 10	on			
No Supervisory Interrupt	off			
Supervisory Interrupt IRQ 15 *		off		
PS/2 Mouse on IRQ 12 *			on	
PS/2 Mouse on IRQ 12 Disabled			off	
Position 4*				off
*Factory Settings (in all cases pos. 2 & 4 - are off)	on	off	on	off

Jumper Settings

On-Board Symbios SCSI Adapter/Jumper Settings

The board is equipped with an integrated Ultra Fast/Wide SCSI adapter. This adapter is enabled or disabled via the Chipset option of the BIOS Setup utility and via a hardware jumper.

The SCSI adapter is a bus master device which gains control of the PCI bus to transfer data between the CPU memory and the SCSI devices. The I/O base address and interrupts are set by the PCI plug and play BIOS at boot time.

A SCSI configuration utility is available on boot-up of the board. Shortly after the SCSI BIOS information displays, the configuration program can be accessed by pressing ***Control C***. The configuration utility will allow you to scan the SCSI bus, change configuration options, and view a list of SCSI devices connected to the board.

JP3—Enable/Disable SCSI

The on-board Symbios Ultra Fast/Wide SCSI controller can be enabled or disabled in the system BIOS and via hardware with jumper JP3 (see Figure 2 for location).

Table 2 defines the jumper settings for JP3.

Table 2 SCSI Jumper Settings (JP3)

Jumper	Function	Jumper On Pins 1-2	Jumper On Pins 2-3
JP3	SCSI	Enabled	Disabled

JP1—Enable/Disable SCSI Termination

To enable SCSI termination on the SP5233XS board, a shunt must be installed on JP1 as shown in Figure 3. The SCSI connector (J9 on Figure 2) will then be configured as one end of the SCSI chain.

The last device on the SCSI chain (example: SCSI drive #1, Figure 3) must also supply a termination load to the cable. SCSI devices not at the end of the cable must have their termination loads disconnected.

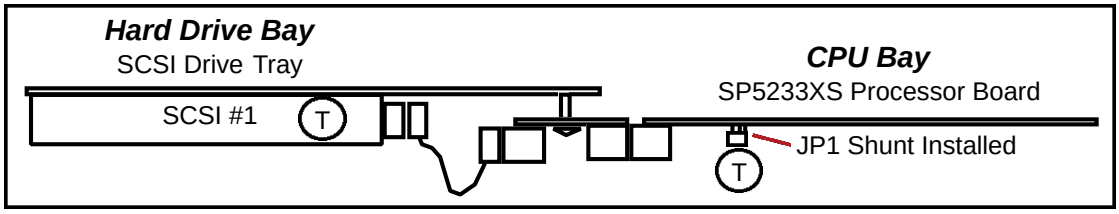

Figure 3 Terminating Internal SCSI Devices (top view)

To disable on-board SCSI termination on the SP5233XS board, the shunt must be removed from JP1 as shown in Figure 4. The device on each end of the SCSI chain must supply a termination load to the cable (examples: SCSI Drives #1 and #2 in Figure 4). SCSI devices not at the end of the cable must have their termination loads disconnected. Also, an end bracket with the external SCSI cable connector (68-pin) must be installed into an expansion slot adjacent to the processor board slot at the rear of the Density enclosure.

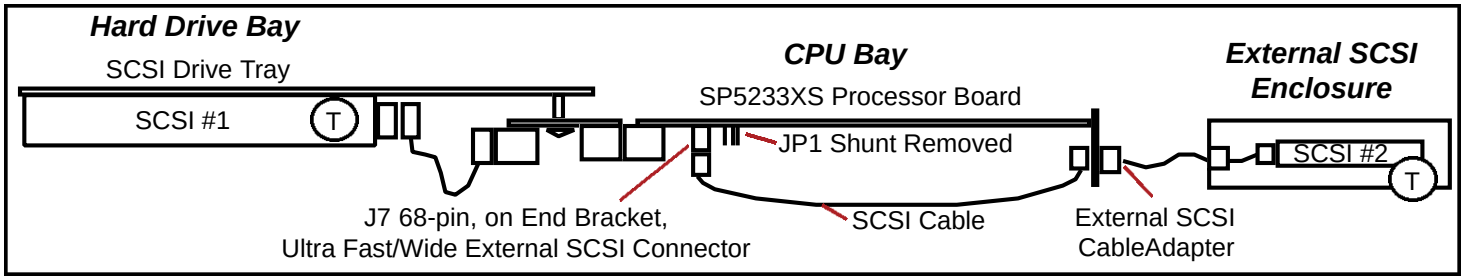

Figure 4 Terminating External and Internal SCSI Devices (top view)

On-Board Ethernet Adapter Jumper Settings

The board is equipped with an integral DEC 21140 PCI fast Ethernet controller with a RJ-45 10/100 BASE-T connector on the mounting bracket at the rear of the board. The I/O addresses and interrupts are set by the PCI plug and play BIOS at boot time.

The adapter is enabled or disabled via the “Chipset” option of the BIOS Setup utility and via hardware with jumper JP5 (see Figure 2 for location).

Table 3 defines the jumper settings for JP5.

Table 3 Ethernet Jumper Settings (JP5)

Jumper	Function	Jumper On Pins 1-2	Jumper On Pins 2-3
JP5	Ethernet	Enabled	Disabled

Other Jumper Settings

Jumpers JP4, JP7, JP8 and JP9 (CPU voltage and speed) should not be changed.

DIMM Memory Installation

Additional memory can be installed on the SP5233XS board. There are two DIMM slots available on this board (see Figure 2 for location). If only one DIMM is installed, this DIMM should be installed in the DIMM 1 slot. If two DIMMs are installed, it does not matter what size DIMM goes into the DIMM slots.

To insert the DIMM(s), the card interface tabs must be aligned. Firmly seat the DIMM(s) into place.

Please note the following information regarding DIMMs.

- Cubix memory is provided in 168-pin, 72 bit standard 60ns buffered DIMMs.
- DIMMs do not need to be installed in pairs, and different sizes may be mixed.

Warnings and Procedures

The installation of processor boards require entry into the CPU bay of the Density Series system which is restricted to service personnel only. Accordingly, the following warnings apply.

CAUTION!
CONTAINS HAZARDOUS VOLTAGES, NO USER SERVICEABLE PARTS INSIDE

ATTENTION!
TENSION DANGEREUSE, L'APPAREIL NE COMPORTE AUUN ELEMENT QUE L'UTILISATEUR PULSSE REPARER

ACHTUNG!
GEFAHRLICHE STROMSPANNUNGEN! KEIN BENUTZER ZUGANGLICHE TEILE!

CAUTION!
GROUP POWER MUST BE OFF BEFORE INSTALLING ANY CUBIX PROCESSORS, PERIPHERAL BOARDS, OR THIRD-PARTY PERIPHERAL CARDS. FAILURE TO FOLLOW THIS WARNING MAY RESULT IN DAMAGE TO THE DENSITY SERIES SYSTEM AND BOARDS BEING INSTALLED.

Board Installation

The following steps guide you through the installation process

1. At the front console, select and turn power off to the group location where you intend to install the server board.
2. If a hard-drive is installed in the group hard drive slot, remove the hard drive.
3. Confirm the switch and jumper settings are correct on the board being installed.
4. Insert the board into the group slot, ensuring the card interface tabs are aligned-with the center of the slot (see Figure 5).
5. Firmly seat the processor card into the slots by firmly pressing on the top of the card with a palm of your hand.
6. Install the hard drive assembly into the appropriate hard drive bay located in the front of the Density enclosure. The hard drive assembly will fit into the hard drive interface. Press firmly to seat.
7. At the front of the console, apply power to the processor group.

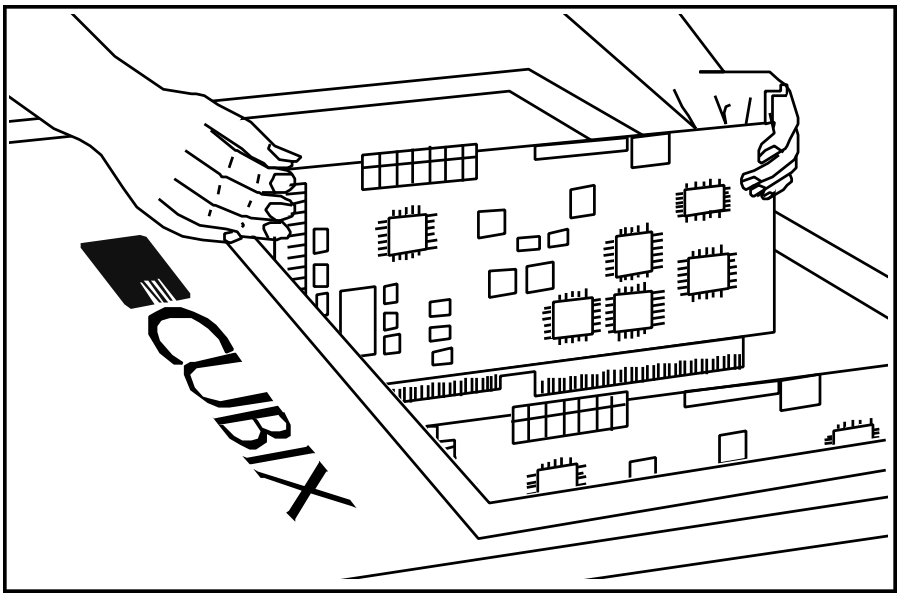

Figure 5 Inserting Server Board into Chassis Group

Ethernet Adapter LEDs

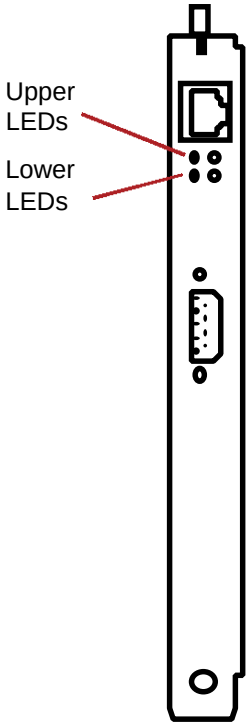

Figure 6
End Bracket with
Ethernet Adapter LEDs

Near the RJ-45 connector and visible in the mounting bracket are two sets of light emitting diodes (LEDs).

On the Upper set:

- The green LED indicates network activity.
- The amber LED indicates a data collision on the network. These LEDs can be useful indicators of network activity.

On the Lower set:

- The green LED will light when the interface has a valid connection to an Ethernet hub.
- The amber LED will light when the interface is set to 100 Mbit/s.

Memory Configuration & Management

Table 4 defines the Memory map for the SP processor.

Table 4 Memory Map

Memory Range	Size	Use
00000-9FFFF	640KB	Conventional Memory
A0000-AFFFF	64KB	VGA Graphics Buffer
B0000-B7FFF	32KB	MDA Text Buffer
B8000-BFFFF	32KB	VGA/CGA Text Buffer
C0000-C7FFF	32KB	VGA Bios
C8000-DFFFF	96KB	Available
E0000-FFFFF	128KB	System & PCI BIOS

Table 5 defines the board's I/O configuration.

Table 5 I/O Map

ISA Ports	Description
0000-00FF	Various "AT" functions in ISP chip and keyboard controller
01F0-01F7	IDE hard drive interface
02F8-02FF	COM2
03A0	Cubix supervisory interface
03A8-03AF	IES serial port
03B4-03B5	VGA
03BC-03BF	LPT1
03C0-03CF	VGA
03D4-03D5	VGA
03F0-03F7	Floppy / IDE
03F8-03FF	COM1

System Interrupts

The 16 system hardware interrupts on the SP5233XS are represented in Table 6. Interrupts are managed by two standard 8259A Programmable Interrupt Controllers (PICs). Interrupts at IRQ 0 through 7 are located on the main PIC; IRQ 8 through 15 are on the SLAVE PIC.

Table 6 System Interrupts

IRQ	Description
0	Timer clock
1	Keyboard
2	Second PIC controller
3	COM2
4	COM1
5	Set By PCI Plug & Play at boot time
6	Floppy Disk Controller
7	LPT1
8	Real Time Clock
9	Redirected IRQ 2
10	Set By PCI Plug & Play at boot time
11	Set By PCI Plug & Play at boot time
12	Available (or PS/2 Mouse)
13	Math Coprocessor
14	Primary IDE Controller
15	Secondary IDE Controller (or IES)

Technical Specifications

The following table represents technical specifications for the Density SP5233XS board.

Table 7 Density SP5233XS Technical Specifications

CPU-Central Processing Unit	Intel® Pentium w/MMX 233 Mhz
L2 Cache	512KB
Max DRAM	512MB
System Chip Set	Triton II (430HX)
Video Chip Set	S3 Trio 64V2/DX, 2MB Video RAM
NIC Chip Set	DEC 21140 10/100 TX
SCSI Chip Set	Symbios 53C895 Ultra Fast/Wide SCSI
Power Requirements	Watts +5VDC +12VDC -5VDC -12VDC 26.00 5.00 0.05 0.00 0.05

Appendix A

Customer Service Information

For Customer Service Information: (800) 829-0551

Customer Service available from:

5:00 am to 5:00 pm PST Monday through Friday
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