

SNX 160/RS NEW / 160/RM SYSTEMA (OLIMPUS)

CHARACTERISTICS

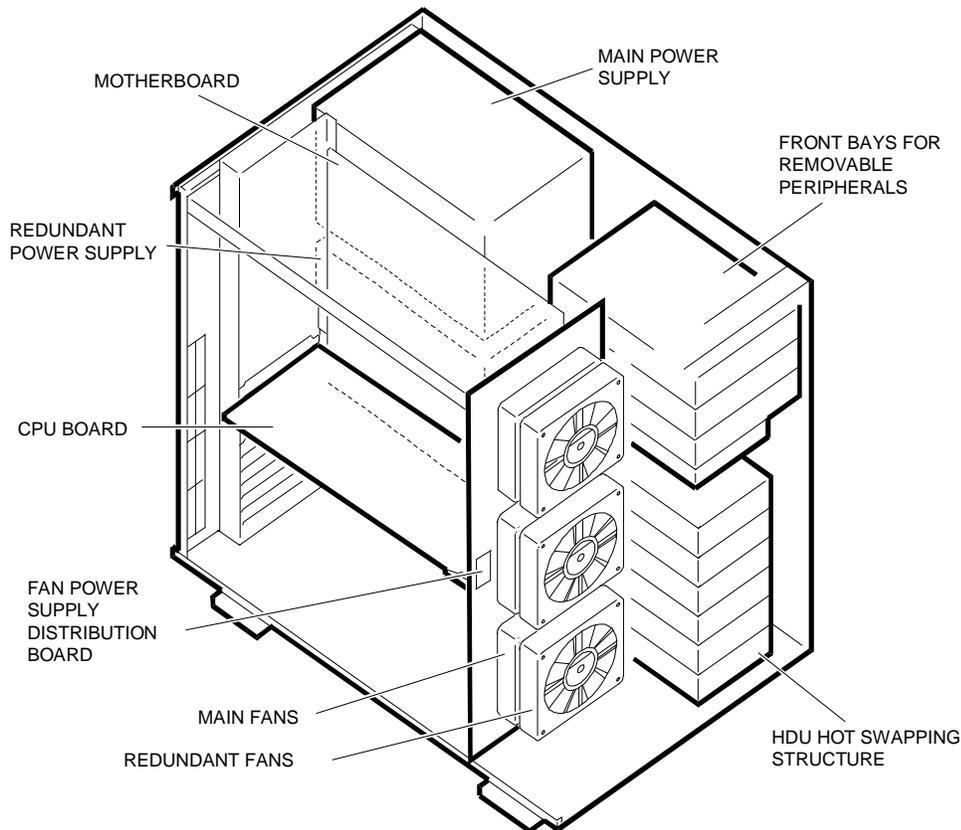
Microprocessor	SNX 160/RS/RM 133: 133/66 MHz Intel PENTIUM 133 SNX 160/RS/RM 166: 166/66 MHz Intel PENTIUM 166 SNX 160/RS/RM 200: 200/66 MHz Intel PENTIUM 200
Dualprocessor	Possibility of adding a second optional processor, identical to the first, on the CPU board. This second processor is installed in a ZIF socket adjacent to the one in which the first processor is installed, thus generating a dualprocessor system.
Overdrive Processor	Possibility of replacing the primary processor, installed in a ZIF socket, with an OverDrive processor up to P55. In this case the system remains a monoprocessor system.
Chipset	Intel Triton II
Bus architecture	- 32-bit primary PCI (Peripheral Component Interconnect), 132 MB/sec - 32-bit secondary PCI (Peripheral Component Interconnect), 132 MB/sec - 32-bit EISA (Extended Industry Standard Architecture), 33 MB/sec
Expansion slots	One specific for the CPU board, two primary PCI, three secondary PCI, three EISA, one double EISA/PCI
Cache memory	16 KB integrated in the processor + 512 KB of second level write back, no Parity, burst synchronous cache, always present and used by both processors.
ECC RAM	32 MB to 512 MB (with 3.3 V DIMMs)
Cabinet	SNX 160/RS: SILVER Wide box SNX 160/RM: Rack 19" Wide box
Video controller	Embedded on the motherboard, SVGA, compatible with the VGA modes
Video memory	1 MB
SAR feature	The Server Automatic Restart (SAR) feature hardware support is provided by the motherboard. Following a system hang caused by hardware or software failures, this feature allows the automatic reset of the system with a successive reboot to render the system available again within a short period of time and without requiring any manual intervention.
Configuration of resilience systems	With the RAID DPT SCSI Wide/Ultra Wide controller for the HDUs and the onboard Lance controller for the removables. The particular structure of the SILVER and RACK cabinets, in association with HDU redundancy (RAID-1 and RAID-5), allows the host swapping of HDUs and the automatic reconstruction of the data on the new hard disk.
Configuration of non-resilience systems	With the onboard Lance SCSI Wide controller for the HDUs and removables, or the onboard Lance for the removables and the GO2109 for the HDUs. HDU hot swapping is not supported.
Redundant systems	Possibility of redundant basic module and PEM configurations consisting of two power supplies and two fan assemblies so that if any of the primary modules fail, all system activities can continue as normal.
Disk Duplexing	Feature which consists of dividing the basic module SCSI channel with six HDUs into two separate channels with three HDUs each. Each channel is connected to a dedicated SCSI controller in order to create two mirrored HDU/controller channels. Software support is provided by the O.S.

<p>Peripheral Expansion Module PEM RS/RM Wide</p>	<p>This optional external module can only host HDUs and increases the system's mass storage capacity. The PEM for RS systems derives from the SILVER Wide box, the PEM for RM systems is available in Rack Wide version and can host up to 12 HDUs (twice as much as the system). The PEM Wide can only be connected to the RAID DPT SCSI controller and therefore the HDUs can always be hot swapped. Up to four PEMs can be connected to the system.</p>
<p>Dual Host</p>	<p>Possibility of dual host configurations using the RAID DPT SCSI controller for the management of the HDUs in the PEM. The configuration consists of two basic modules connected to 1 or 2 Wide PEMs; in case and one of the two systems fails, the other can take control of the HDUs shared in the PEM.</p>
<p>Uninterruptible Power Supply</p>	<p>External, battery-equipped, Standard and Rack UPS models are available which provide constant power supply to the system in the event of AC line voltage failures. To safeguard the integrity of the data stored on the hard disks in the event of line voltage failures, resilience systems equipped with the SCSI RAID DPT controller must be have a UPS.</p>

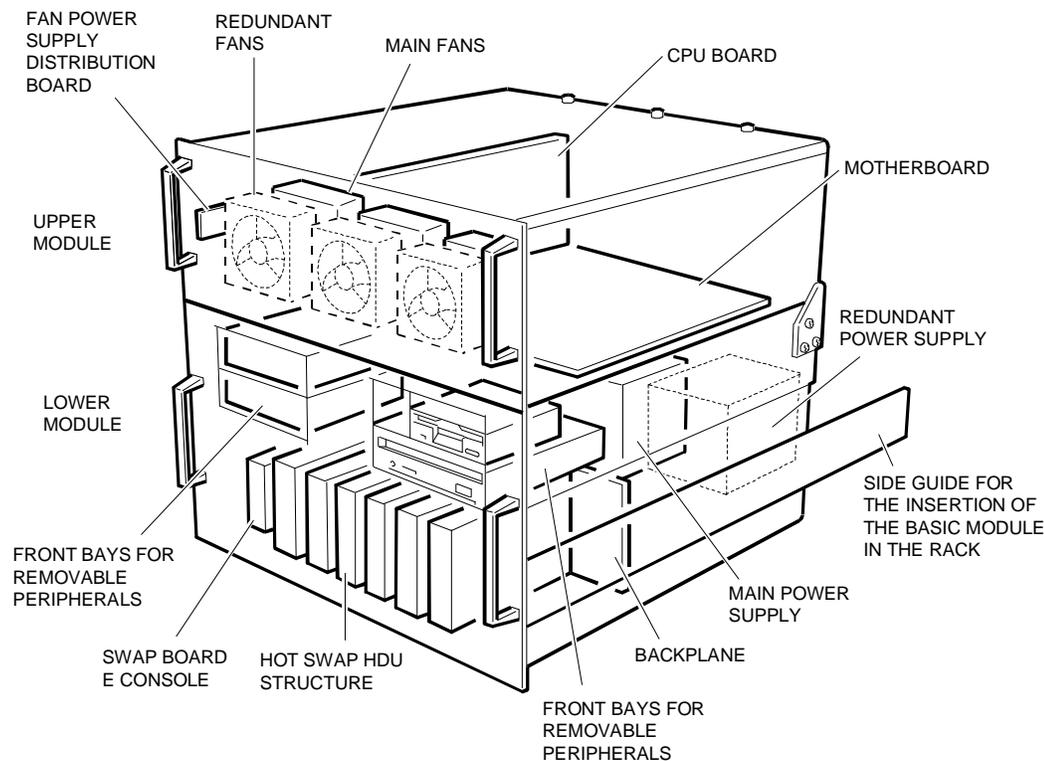
Note: The systems in a 19" rack differ from those in a Silver box for the possibility of being hosted in a Rack module which also contains other components such as monitor, keyboard, UPS, PEM.

Note: The commercial name of the SNX 160/RS Systema and SNX 160/RM Systema remains unchanged for the 133 MHz, 166 MHz and 200 MHz versions. For simplicity and whenever necessary, this guide will distinguish between these versions as follows:
 - SNX 160/RS/RM 133 (133 MHz versions)
 - SNX 160/RS/RM 166 (166 MHz versions)
 - SNX 160/RS/RM 200 (200 MHz versions)

SNX 160/RS NEW BASIC MODULE



SNX 160/RM BASIC MODULE



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UPDATE LEVELS OF THE MAIN COMPONENTS ON THE NEW SERIES SNX 160/RS NEW AND SNX 160/RM MODELS

MOTHERBOARD	CPU BOARD	BIOS
BA2298 lev. Nasc	UC2010 lev. Nasc	Rel. 1.04
RAID DPT SCSI CONTR.	POWER SUPPLY	ORCHESTRA rel. 1.4
GO2098 FW F76	PS45 lev. 03	Conf. 1.02, Diagn. 1.0
SYSTEM TEST		
Rel. 1.0		

Note: All the evolutions of the components are described further on, in the related sections.

OPERATING SYSTEMS

	Release tested with product avail.	Monopro. Cert.	Multipro. Cert.	Additional Multiproc. Software	Notes
Windows 95		Yes	No		For single-user, single-task, graphical environments
Windows NT Server and Service pack 3 / 4	3.51	Yes	Yes	O.S. included	For network management
NetWare 3.x	3.12	Yes	No		For network management
NetWare 4.x	4.1 SMP	Yes	Yes	SMP	For network management. The SMP for symmetrical multiprocessing is available on the Orchestra CD-ROM
UnixWare	2.01	Yes	Yes	O.S. for up to two CPUs included.	For multiple-user, multiple-task environments. Unixware Application Server is distributed by Novell
SCO Unix and SCO Open Server Enterprise	3.2.4.2 3.0.0	Yes	Yes	UOD393C	For multiple-user, multiple-task environment. The UOD 393C patch is distributed by SCO
SCO Open Server and Supplement release 5.0.0d	5.0	Yes	Yes	O.S. included	For multiple-user, multiple-task environments. Supplement Release 5.0.0d is distributed by SCO
OS/2 R2.1 +Fix Pack98 +Lan Server 4.0	2.11 SMP	Yes	Yes		For single-user, multiple-task environments
OS/2	3.0 (Warp)	Yes	Yes		For single-user, multiple-task environments

MONITORS

MODEL	DESCRIPTION	SUPPLIER	PDG NAME
MDU 1441/LE	14" VGA low emission positive monochrome monitor. Label: MDU 1441E/PH01	Philips	DSM 26-314/LE
CDU 1448G/LO	14", VGA Plus, SVGA, 0.28 dp, MPR II/PS color monitor	Lite-On	DSM 50-148
CDU 1448G/HY	14", VGA Plus, SVGA, 0.28 dp, MPR II/PS color monitor	Hyundai	DSM 50-149
CDU 1460/MS	14", VGA Plus, SVGA, 0.28 dp, MPR II/PS/DDC1, 64 KHz, Multifunct. color monitor	Hyundai	DSM 50-144
CDU 1564/MS	15", flat screen, VGA Plus, SVGA, 0.28 dp, MPR II/O.S., FTS, Multisync. color monitor	Hyundai	DSM 50-151
CDU 1786/D	17", flat screen, VGA Plus, SVGA, 0.25 dp, MPR II/PS/DDC1, 82 KHz Diamond, Tron Tub. color monitor	Mitsubishi	DSM 50-175
CDU 1448/MS	14" VGA Plus; SVGA, 0.28 dot pitch, MPR II/PS/DDC, 48 KHz, multifunct. color monitor	Lite-On	DSM 60-400
CDU 1564/OD	15" flat screen, VGA Plus, SVGA, 0.28 dot pitch, MPR II/DCC1, 28/64 KHz	Goldstar	DSM 60-510

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KEYBOARD AND MOUSE

PDG	DESCRIPTION
ANK 27-101/N	101-key compact keyboard + cable. Contains the BU's power cord.
ANK 27-102/N	102-key compact keyboard + cable. Contains the BU's power cord.
ANK 27-104	104-key compact keyboard + cable (for Brazil). Contains the BU's power cord.
ANK 28-101	101-key S-compact keyboard + cable. Contains the BU's power cord.
ANK 28-102	102-key S-compact keyboard + cable. Contains the BU's power cord.
ANK 60-104	104-key WIN95 keyboard + cable. Contains the BU's power cord.
ANK 60-105	105-key WIN95 keyboard + cable. Contains the BU's power cord.
GRD 50-S35/3T	Three-button high resolution mouse + management software

Note: The WIN95 keyboards do not contain the basic module's power cord in their box. This power cord must be ordered separately using code CBL 2307.

MAGNETIC PERIPHERALS

MODEL	TYPE	INT.	CAP.	SIZE	PDG NAME
Y-E Data YD-702D-6037D Y-E Data YD-702D-6537D Sony MPF520-3 Mitsumi D359T5 Epson SMD 1340 P-031	MFD	SA450	1.44 MB	3.5"	Under BU
Wangtek 5150 ES-ACA	STU	SCSI	150/250 MB	5.25" HH	STS 26-150
Wangtek 5525 ES-ACA	STU	SCSI	320/525 MB	5.25" HH	STS 26-321
Wangtek 51000HT (std front panel) Tandberg TDC4120	STU	SCSI	1/1,2 GB	5.25" HH	STS 1G-95
Hewlett Packard HP C1536A	DAT	SCSI	2/8 GB	3.5"	DAT 4000/S
Hewlett Packard HP C1536A Sony SDT-4000 (with mechanical adapter for 5.25" bays)	DAT	SCSI	2/8 GB	3.5"	DAT 4000DDS
Hewlett Packard HP C1533A	DAT	SCSI	4/16 GB	3.5"	DAT DDS2-4G
Hewlett Packard HP C1533A Sony SDT-7000 (with mechanical adapter for 5.25" bays)	DAT	SCSI	4/16 GB	3.5"	DAT 8000DDS2
Panasonic CR-504-J (4X) Sony CDU76S-01 (4X)	CD-ROM	SCSI	650 MB	5.25" HH	CDR 4S-500
Panasonic CR-506-B (8X)	CD-ROM	SCSI	650 MB	5.25" HH	CDR 8S-500
Seagate ST31230WC (SCA conn.) Seagate ST31051WC (SCA conn.)	Wide 5400 rpm HDU	SCSI	1.05 GB	3.5" x 1"	HDR 1G
Seagate ST32430WC (SCA conn.) Seagate ST32151WC (SCA conn.)	Wide 5400 rpm HDU	SCSI	2.1 GB	3.5" x 1"	HDR 2G
Seagate ST32550WC (SCA conn.)	Wide 7200 rpm HDU	SCSI	2.1 GB	3.5" x 1"	HDR 2G72
Seagate ST15230WC (SCA conn.)	Wide 5400 rpm HDU	SCSI	4.2 GB	3.5"x 1,6"	HDR 4G
IBM DCAS 34330 (SCA conn.)	Wide 5400 rpm HDU	SCSI	4.2 GB	3.5"x 1"	HDR 4G54-80
Seagate ST32171WC (SCA conn.)	Ultra-Wide 7200 rpm HDU	SCSI	2.1 GB	3.5" x 1"	HDR 2G72-UW
Seagate ST34371WC (SCA conn.)	Ultra-Wide 7200 rpm HDU	SCSI	4.2 GB	3.5"x 1"	HDR 4G72-UW
Seagate ST19171WC (SCA conn.)	Ultra-Wide 7200 rpm HDU	SCSI	9.1 GB	3.5"x 1,6"	HDR 9G72-UW

- Notes:** - The HDUs that are compatible with this system and with the PEM are hot swappable drives fixed on an appropriate support and equipped with an 80-pin SCA (Single Connector Attachment) interface connector that allows direct connection to the system and PEM backplane.
- In RAID configurations, always use HDUs with the same speed (all 5400 RPM or all 7200 RPM).
 - The Ultra Wide HDUs available for this system only work in the Fast Wide mode since they are always connected to a Fast Wide controller.
 - The 9.1 GB ST19171WC HDU can only be fitted in the rack BUs if the environmental temperature of the location where the BU is installed is ≤ 25 degrees Centigrade.

ELECTRONIC BOARDS

BOARD NAME	DESCRIPTION	BUS	PDG NAME
BA2298	Motherboard with ten expansion slots, Lance SCSI Wide controller, Super VGA video controller, 1 MB video memory, 512 KB BIOS Flash EPROM, floppy disk controller, two serial ports, parallel port, keyboard and mouse management	-	Under BU
UC2010	CPU board equipped with a 133/166/200 - 66 MHz Pentium 133/166/200 processor installed in a ZIF Socket 7 with dedicated VRM, a second Socket 7 for the installation of a second optional Pentium processor identical to the first and also equipped with a VRM socket, 512 KB of write-back, no parity burst synchronous second level cache always present and shared between the two processors, a Triton II chipset, four DIMM sockets for a 32 MB to 512 MB system memory capacity	-	Under BU
	Additional Pentium 133/166/200 processor with a passive heatsink and VRM	-	APU 133/166/200 PENT-P
GO2109 (Lance)	Single-channel single-ended SCSI Wide controller based on the Adaptec AIC 7870 (Lance) chipset	PCI	SCC PCI 114W
GO2098 (PM3334W) (RAID DPT)	Single-/tri-channel single-ended SCSI Wide controller with hard disk hot swapping RAID-0, 1, 5 features. The second and third channels are optional and are provided by means of a board plugged into the specific socket on the controller board. The controller is also equipped with four sockets for the installation of ECC cache; one socket with 4 MB is always filled.	PCI	Under BU or DCR PCI1/3W
IF2048 (SX4030/1W)	Piggy back board providing the second SCSI Wide channel (external only), on the GO2098, internal SCSI Wide cable for connection between the board and SCSI connector flush with the system frame.	-	EXP 2NDSCSIW
IF2049 (SX4030/2W)	Piggy back board providing the second and third SCSI Wide channels (external only), on the GO2061, two internal SCSI Wide cables for connection between the board and SCSI connectors flush with the system frame.	-	EXP 2&3SCSIW
GO2173 (PM3334UW) (RAID DPT)	Single-/tri-channel single-ended SCSI Ultra Wide controller with hard disk hot swapping RAID-0, 1, 5 features. The second and third channels are optional and are provided by means of a board plugged into the specific socket on the controller board. The controller is also equipped with four sockets for the installation of ECC cache; one socket with 4 MB is always filled. Note: Used when the GO2098 is no longer in stock.	PCI	DCR PCI1/3UW
IF2065 (SX4030/1UW)	Piggy back board providing the second SCSI Ultra Wide channel (external only), on the GO2173, internal SCSI Wide cable for connection between the board and SCSI connector flush with the system frame.	-	EXP 2NDSCSIUW
IF2066 (SX4030/2UW)	Piggy back board providing the second and third SCSI Ultra Wide channels (external only), on the GO2173, two internal SCSI Wide cables for connection between the board and SCSI connectors flush with the system frame.	-	EXP 2&3SCSIUW
MEM 2027 (SM4000/4)	One 4 MB ECC SIMM for cache expansion on the GO2098 controller. Maximum expansion is obtained by adding three kits for a total of 16 MB. Only 4 MB and 16 MB configurations are supported.	-	RACME 04

BOARD NAME	DESCRIPTION	BUS	PDG NAME
IF2046/2067	SCSI Wide backplane for the connection of the HDU to the SCSI controller and to the power supply.	-	Under BU and PEM Wide
IF2031	Swap board for console LED interface.	-	Under BU and PEM
IF2022	Jumper board joining the backplane's two SCSI buses. Used on non-duplexing configurations.	-	Under BU and PEM
IF2024	Terminator board to separately terminate the two SCSI buses of the basic module backplane. For duplexing configurations only. The kit also contains the internal SCSI Wide cable for the connection of the backplane to the SCSI controller.	-	DUPKIT240W DUP KIT240RM/W
IF2015	Fan power supply distribution board.	-	Under BU
IF2035	Power supply parallelism board for RS systems. In addition to the board, the redundancy kit also includes the second PS45 power supply, three fans with related support, motherboard-IF2035 connection cable, IF2035-SCSI backplane connection cable, current share cable for the connection of two power supplies. The board is also provided in the PEM RS redundancy kit.	-	RED KIT200
IF2034	Power supply parallelism board for RM systems. In addition to the board, the redundancy kit also includes the second PS45 power supply, three fans with related support, motherboard-IF2034 connection cable, IF2034-SCSI backplane connection cable, current share cable for the connection of two power supplies. The board is also provided in the PEM RM redundancy kit.	-	RED KIT240RM
GO2057 (Stallion)	32-channel RS232D multiport board. The kit also contains the cable for connection to the DBOX	EISA	C-MUX8-32E
BOX 800	8-way RS232D DBOX for Stallion (max 4)	-	DBOX 800
BOX 1600	16-way RS232D DBOX for Stallion (Max 2)	-	DBOX 1600
(supplier Olicom)	Token Ring 16/4 LAN controller	PCI	OC 3137
(supplier Z'NYX)	Ethernet COMBO (10BaseT + COAX) LAN controller	PCI	ZX312
(supplier 3Com)	Etherlink III, 10Base_T LAN controller	EISA	3C592 TPO
(supplier 3Com)	Etherlink III, 10Base_T + COAX LAN controller	EISA	3C592 COMBO
(supplier 3Com)	Etherlink III, 10Base_T LAN controller	PCI	3C900 TPO
(supplier 3Com)	Etherlink III, 10Base_T + AUI + COAX LAN controller	PCI	3C900 COMBO
(supplier 3Com)	Fast Ethernet 10/100 LAN controller	PCI	3C905 TX

Note: Different LAN and WAN controller boards can be installed in the system. The table above only lists the more recent ones, listed in the PdG.

POWER SUPPLIES AND SPS

POWER SUPPLY	OUTPUT VOLT.	TOLERANCE	MAX. CURR.	TOT. POW.	INPUT VOLT.	FREQ.	CABINET
PS45	+5 V +12 V -12 V -5 V +5 Aux +3.43 V Fan Out.	+5% -4% +5% -4% +10% -10% +5% -5% +5% -5% +5% -4% -6.4 V / -13.5 V	52 A 11 A 0.5 A 0.2 A 0.6 A 36.4 A 1.6 /3.6	450 W	100-120 Vac 200-240 Vac	50/60 Hz	Base and PEM

Note: The Fan Output voltage is controller by a sensor that checks the temperature of the air inside the power supply.

UPS	TOT POW.	VER.	INPUT VOLTAGE	OUTPUT VOLTAGE	CAB.
APC - SMART UPS 1000 VA (*)	670 W	100/120 Vac	100/120 Vac 50/60 Hz	100/115 Vac 50/60 Hz	External
APC - SMART UPS 1400 VA (*)	950 W	220/240 Vac	220/240 Vac 50/60 Hz	225/240 Vac 50/60 Hz	
APC - SMART UPS 2200 VA (*)	1600 W				
APC - SMART UPS 3000 VA (*)	2250 W				

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(*) = Models also existing in a 19" RACK version for connection to the SNX 160/RM.

Note: By connecting the UPS and system by means of the RS232 serial interface and with the support of the PowerChute Plus software, specific for each operating system and available on diskette, a complete setting of the UPS hardware can be made. This program displays the status of the UPS on the system monitor, but its main feature is to perform a programmed system shutdown in the event of extended line voltage failures. It is also runs a number of personalized operations and functions.

Note: The UPS model is selected according to the power required by the system, and must be backed up by any external module connected to it such as, for example, a PEM.

Note: The UPS can be connected to the network by plugging a LAN board into the specific slot in the UPS itself.
The batteries on these UPSes can also be replaced without removing power from the load.

SERIAL AND PARALLEL CONNECTION CABLES

PDG	VAR.	DESCRIPTION	LENGTH (m)	CONNECTORS
CBL 2934	-	Cross-wired serial cable for DBOX to printer connections	3	RJ45 - Cannon 8 M - 25 M
CBL 2935	-	Straight serial cable for DBOX to printer connections	3	RJ45 - Cannon 8 M - 25 M
CBL 2938	-	Cross-wired serial cable for DBOX to WS or printer connections	3	RJ45 - Cannon 8 M - 25 F
CBL 5360	-	Cross-wired serial cable for serial port to printer connections	3	Cannon D-shell 25 M - 9 F
CBL 5361	-	Straight serial cable for serial port to modem connections	3	Cannon D-Shell 25 M - 9 F
CBL 5362	-	Cross-wired serial for serial port to WS or printer connections	3	Cannon D-shell 25 M - 9 F
CBL 2491	CAV145	Parallel cable for parallel port to peripheral connections	1.5	Cannon - Centronics 25 M - 36 M
	CAV146		3	
CBL 2858	CAV 143	Straight serial extension cable for modem or printer connections. Used as an extension for cables CBL 5360, CBL 2934, CBL 5361 and CBL 2935.	3	Cannon - Cannon 25 F - 25 M
	CAV 144		6	

INTERRUPT LEVELS

LEVEL	STATUS	FUNCTION
NMI	Reserved	Fatal errors: system failure or double RAM error
SMI	Reserved	Power management or ECC error
IRQ0	Reserved	Timer
IRQ1	Reserved	Keyboard
IRQ2	Reserved	Cascade interrupt from the PIC slave
IRQ3		COM2 on the motherboard (edge), if enabled, otherwise free
IRQ4		COM1 on the motherboard (edge), if enabled, otherwise free
IRQ5		LPT2 on the motherboard (edge), if enabled, otherwise free
IRQ6		Floppy controller on the motherboard (edge), if enabled, otherwise free
IRQ7		LPT1 on the motherboard (edge), if enabled, otherwise free
IRQ8	Reserved	Real time clock
IRQ9	Free	Can be used for the onboard SCSI or SVGA controller
IRQ10	Free	
IRQ11	Free	
IRQ12		Mouse on the motherboard (edge), if enabled, otherwise free
IRQ13	Reserved	
IRQ14	Free	
IRQ15	Free	Usually reserved for the SCSI controller

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SYSTEM MEMORY MAP

ADDRESS RANGE	SIZE	FUNCTION
00000H to 07FFFFH	512 KB	Base memory
80000H to 9FFFFH	128 KB	Base memory enabled in the Setup
0A0000H to 0BFFFFH	128 KB	Video RAM
0C0000H to 0C7FFFFH	32 KB	Shadow RAM reserved for the video BIOS
0C8000H to 0CFFFFH	32 KB	Shadow RAM reserved for the SCSI BIOS
0D0000H to 0EFFFFH	128 KB	User memory area
0F0000H to FFFFFH	64 KB	System BIOS
100000H to 14 MB		System memory

DMA CHANNELS

CHANNEL	FUNCTION	CHANNEL	FUNCTION
0	Free	4	Reserved
1	Free or onboard EPP/ECP	5	Free
2	Reserved for the onboard floppy controller	6	Free
3	Free or onboard EPP/ECP	7	Free

I/O ADDRESS MAP

I/O ADDRESS	DEVICE	CHIP
000 - 00F	Slave DMA controller 1	ESC
020 - 021	Master interrupt controller 1	ESC
022 - 023	ESC index and data registers	ESC
040 - 043	Timer 1	ESC
048 - 04B	Timer 2	ESCSIO
60, 64	Keyboard/mouse controller	ESCSIO
61	NMI and diagnostic port	ESC
070 - 071	Real time clock	ESC
080 - 08F	DMA page register	ESC
092	System control port	ESC
0A0 - 0A1	Slave interrupt controller 2	CPU
0C0 - 0DE	Master DMA controller 2	SIO
0F8 - 0FF	Math coprocessor	SIO
278 - 27B	Parallel port 2 (LPT2)	SIO
2E8 - 2EF	Serial port 4 (COM4)	SIO
2F8 - 2FF	Serial port 2 (COM2)	VGA
378 - 37F	Parallel port 1 (LPT1)	SIO
3B0 - 3BB	VGA registers	SIO
3BC - 3BE	Parallel port 3 (LPT3)	SIO
3F0 - 3F5	Onboard floppy disk controller	SIO
3F7	Floppy controller	ESC
3F8 - 3FF	Serial port 1 (COM1)	ESC
400 - 40B	Extended DMA controller 1 registers	ESC
461 - 464	Extended NMI registers and fail safe timer	ESC
464 - 465	Extended bus master	ESC
480 - 48F	Extended DMA page register	ESC
4C2 - 4CE	Extended DMA2 registers	ESC
4D0	Extended interrupt 1	ESC
4D1	Extended interrupt 2	ESC
4D4	Extended DMA2 chaining	PLD
C00	EISA NVRAM page register	PLD
C04 - C08	System board configuration registers	PLD
C20 - C24	Automatic server recovery registers	PLD
C28	Hot pluggability registers	ESC
C2B - C2F	General purpose	ESC
C80 - C83	System board EISA ID register	TXC
C84	System board enable	
CF0 - CFF	PCI mechanism 1 access registers	

POWER ON DIAGNOSTIC MESSAGES

ERROR MESSAGES	DESCRIPTION
SYSTEM BOOTSTRAP ERROR MESSAGES	
Non-System Disk or Disk Error Replace Disk and Strike Any Key	A damaged diskette, or one without the bootable file, has been inserted in drive A at system power on. The diskette must be replaced by a suitable diskette. It may also be that the drive and the diskette are not compatible, that the drive is not set correctly in the ROM Setup utility, check.
No ROM BASIC Available - RESET	There is an error in the system BIOS if the error persists after a reset. Replace the CPU board and rewrite the BIOS flash EPROM.
CPU CACHE MEMORY TEST ERROR MESSAGES	
Primary Cache Addr Line Error	Primary cache error. Run the diagnostics, replace the processor or the CPU board.
Primary Cache INVLD Error	Primary cache error. Run the diagnostics, replace the processor or the CPU board.
Primary Cache Flush Error	Primary cache error. Run the diagnostics, replace the processor or the CPU board.
Primary Cache Read/Write Error	Primary cache error. Run the diagnostics, replace the processor or the CPU board.
Secondary Cache Addr Line Error	Secondary cache error. Run the diagnostics, replace the processor or the CPU board.
Secondary Cache Read/Write Error	Secondary cache error. Run the diagnostics, replace the processor or the CPU board.
Secondary Cache Copy-Back Error	Secondary cache error. Run the diagnostics, replace the processor or the CPU board.
Secondary Cache Gate A20 Line Error	Secondary cache error. Run the diagnostics, replace the processor or the CPU board.
Secondary Cache Shadow RAM Error	Secondary cache error. Run the diagnostics, replace the processor or the CPU board.
CPU ERROR MESSAGES	
CPU x Selftest xxx MHz Error Ckpt: xxH Error	Replace the processor and the CPU board.
DMA REGISTER ERROR MESSAGES	
DMA Address Register Error	DMA controller error. Run the diagnostics, replace the motherboard.
DMA Count Register Error	DMA controller error. Run the diagnostics, replace the motherboard.
DMA Mask Register Error	DMA controller error. Run the diagnostics, replace the motherboard.
DMA Page Register Error	DMA controller error. Run the diagnostics, replace the motherboard.
DMA Stop Register Error	DMA controller error. Run the diagnostics, replace the motherboard.
EISA/PCI CONFIRUATION ERROR MESSAGES	
ID Configuration Error in slot(s): xx	The slot x EISA ID stored in EEPROM does not match the true EISA ID. Either a new EISA board is installed in the slot or an existing board has been removed. Check by running the ECU.
ID Timeout Error in slot(s): xx	Timeout during the reading of the EISA ID of the board installed in slot x. Make sure the board is inserted in the slot, replace the board or the motherboard.
RAM/ROM Attribute Conflict Error in slot(s): xx	The memory attribute assigned to the board installed in slot x is in conflict with the attribute available for this memory range. Run the ECU.
C000: Seg RAM/ROM Attrib Conflict Error in slot(s): xx	The C000 range is set as RAM in slot x but the user configured the C000 range for shadowing purposes (as a ROM). Run the ECU.

ERROR MESSAGES	DESCRIPTION
C800: Seg RAM/ROM Attrib Conflict Error in slot(s): xx	The C000 range is set as RAM in slot x but the user configured the C000 range for shadowing purposes (as a ROM). Run the ECU.
D000: Seg RAM/ROM Attrib Conflict Error in slot(s): xx	The C000 range is set as RAM in slot x but the user configured the C000 range for shadowing purposes (as a ROM). Run the ECU.
D800: Seg RAM/ROM Attrib Conflict Error in slot(s): xx	The C000 range is set as RAM in slot x but the user configured the C000 range for shadowing purposes (as a ROM). Run the ECU.
Incomplete Configuration Error in slot(s): xx	The configuration in EEPROM of the board installed in slot x is incomplete. Run the ECU.
Invalid Configuration Error in slot(s): xx	Configuration error in EEPROM relating to the board installed in slot x. Run the ECU.
Invalid DMA Configuration Error in slot(s): xx	DMA configuration error in EEPROM relating to the board installed in slot x. Run the ECU.
Invalid IRQ Configuration Error in slot(s): xx	IRQ configuration error in EEPROM relating to the board installed inslot x. Run the ECU.
Invalid Memory Configuration Error in slot(s): xx	Memory configuration error of the board installed in slot xx. Configure the board.
Invalid Port Configuration Error in slot(s): xx	I/O port configuration error in EEPROM relating to the board installed in slot x. Run the ECU.
Invalid Slot Init Error in slot(s): xx	The POD have detected a configuration error in EEPROM relating to the board installed in slot x. Run the ECU.
Video RAM Attribute Error in slot(s): xx	The video RAM of the board installed in slot x is incorrectly set as a read-only or as a cacheable memory (video RAM is read/write only, and not cacheable). Run the ECU.
PCI Configuration in slot xx	Configuration error. Insufficient system memory or buffer allocation error. Run the ECU to manually solve this configuration conflict.
FLOPPY DISK ERROR MESSAGES	
Floppy Disk CMOS Count Config Error	The floppy disk drive number configured in the EEPROM is not the same as the one detected by the POD. Run the ROM Setup utility, check the FDU signals and power cables.
Floppy Disk Type Configuration Error	The floppy disk drive number configured in the EEPROM is not the same as the one detected by the POD. Run the configurator.
Floppy Disk Controller Config Error	The floppy controller is not configured correctly. Run the configurator.
Floppy Disk ESC Enable/Disable Error	The floppy disk controller has not been enabled by the ESC; replace the motherboard.
Floppy Disk Port 3F3h Media Sensing Error	Port 3F3h, which contains information on the type of floppy disk and support installed, has failed a compatibility test. Run the configurator, replace the motherboard.
Floppy Disk Port 3F3h Read/Write Error	Read/write operations on floppy disk port 3F3h are not performed correctly during the POD. Run the configurator, replace the motherboard.
KEYBOARD/ MOUSE ERROR MESSAGES	
Keyboard Controller Communication Error	Communication error with the keyboard controller. Run the diagnostics, check keyboard connection, replace the cable, keyboard, or motherboard.
Keyboard Controller Selftest Error	The keyboard controller selftest has failed. Run the diagnostics, replace the keyboard.
Keyboard Clock/Data Line Error	The keyboard control signals are interrupted or shorted. Run the diagnostics, check the keyboard connection, replace the cable, the keyboard, then the motherboard.
Keyboard Interrupt Error	Interrupt test failure on the keyboard controller. Run the diagnostics, replace the motherboard.
Keyboard Controller Error	Keyboard controller error. Run the diagnostics, replace the motherboard

ERROR MESSAGES	DESCRIPTION
Keyboard Selftest Error	The keyboard self-test has failed. Run the diagnostics, replace the keyboard or the motherboard.
Keyboard Stuck Key Code: xxh Error	Stuck key condition detected on the keyboard; the scan code of the stuck key is displayed in the hex format. Run the diagnostics, replace the motherboard.
Pointing Device Error	Error during the mouse test. Run the diagnostics, replace the mouse, then the motherboard
Keyboard/Pointing Device Fuse Error	Keyboard/mouse fuse blown. Replace it.
COPROCESSOR ERROR MESSAGES	
Math Coprocessor Stack Error	Internal processor error. Run the diagnostics, replace the processor or the CPU board.
Math Coprocessor Trig Error	Internal processor error. Run the diagnostics, replace the processor or the CPU board.
Math Coprocessor Logarithm Error	Internal processor error. Run the diagnostics, replace the processor or the CPU board.
Math Coprocessor Exception Error	Internal processor error. Run the diagnostics, replace the processor or the CPU board.
Math Coprocessor Interrupt Error	Internal processor error. Run the diagnostics, replace the processor or the CPU board.
Math Coprocessor Config Error	The coprocessor is configured as being present, but it is not found, or the coprocessor is configured as being not present but has been found. Run the ROM Setup Utility, then replace the CPU board.
MEMORY TEST ERROR MESSAGES	
Base Memory Adapter Parity Error in Slot: xx	Memory access error. Check the installation of the DIMMs. Replace the DIMMs or the CPU board.
Base Memory Address Line Error at Addr: xxxxxxxh Wrote: xxxxxxxh Read: xxxxxxxh	Memory access error. Check the installation of the DIMMs. Replace the DIMMs or the CPU board.
Base Memory Dword Access Error at Addr: xxxxxxxh, Wrote: xxxxxxxh Read: xxxxxxxh	Memory access error. Check the installation of the DIMMs. Replace the DIMMs or the CPU board.
Base Memory Read/Write Error at Addr: xxxxxxxh, Wrote: xxxxxxxh Read: xxxxxxxh	Memory access error. Check the installation of the DIMMs. Replace the DIMMs or the CPU board.
Base Memory System Parity Error at Addr: xxxxxxxh, Wrote: xxxxxxxh Read: xxxxxxxh	Memory access error. Check the installation of the DIMMs. Replace the DIMMs or the CPU board.
Base Memory Configuration Error	The base memory capacity configured is different than the capacity actually installed. Run the configurator and this error condition is automatically corrected.
Extended Memory Configuration Error	The extended memory capacity configured is different than the capacity actually installed. Run the configurator and this error condition is automatically corrected.
Memory Mismatch Error	The base or extended memory capacity configured is different than the capacity actually installed. Run the configurator and this error condition is automatically corrected.
Extended Memory Adapter Parity error in Slot: xx	Parity error on the EISA/ISA board installed in slot x. Run the ECU, replace the board, replace the motherboard.
Extended Memory Dword Access Error at Addr: xxxxxxxh Wrote: xxxxxxxh Read: xxxxxxxh	The DRAM word access control signals are interrupted or shorted. Run the diagnostics, replace the CPU board.
Extended Memory Address Line Error at Addr: xxxxxxxh Wrote: xxxxxxxh Read: xxxxxxxh	The DRAM address signals are interrupted or shorted. Run the diagnostics, replace the CPU board.
Extended Memory Read/Write Error at Addr: xxxxxxxh Wrote: xxxxxxxh Read: xxxxxxxh	DRAM read/write error or EEPROM configuration error. Check the configuration, run the diagnostics, replace the DIMMs, replace the CPU board.

ERROR MESSAGES	DESCRIPTION
Extended Memory System Parity Error at Addr: xxxxxxxh Wrote: xxxxxxxh Read: xxxxxxxh	System memory parity error. Check the installation of the DIMMs on the CPU board, run the diagnostics, replace the DIMMs, replace the CPU board.
Total Memory Configuration error	The total memory capacity configured is different than the capacity actually installed. Run the configurator and this error condition is automatically corrected.
Unable to Enter Protected Mode	Run the diagnostics, replace the CPU board.
Unable To Clear Parity/IOCC Error	Parity error during I/O access (depends on the previous error). Run the diagnostics, replace the CPU board.
REMOTE TERMINAL, SERIAL PORT PARALLEL PORT ERROR MESSAGES	
Remote Terminal Configuration Error	Invalid terminal type or COM port selection, or the COM port selected is disabled or not available, or there is no terminal connected to the COM port. Run the ECU.
Remote Terminal Hardware Error	The COM port selected does not work. Replace the motherboard.
Remote Terminal Installation Error	The remote terminal feature has been requested but there is no I/O device (monitor/keyboard, remote terminal via COM2 or remote terminal via COM1) available. Run the Configuration Utility.
Serial Port x Address Conflict Error	Address conflicts between the motherboard serial port and the COMx serial port on the expansion ISA board. Run the ECU.
Serial Port x IRQ Config Error	COMx serial port IRQ configuration error. Run the ECU.
Serial Port x Reg Read/Write Test Error	COMx serial port hardware error. Run the diagnostics, replace the motherboard.
Serial Port x MODEM Loopback Test Error	COMx serial port hardware error. Run the diagnostics, replace the motherboard.
Serial Port x FIFO Buffer Test Error	COMx serial port hardware error. Run the diagnostics, replace the motherboard.
Serial Port x Interrupt Test Error	COMx serial port hardware error. Run the diagnostics, replace the motherboard.
Parallel Port Address Conflict Error	I/O address conflicts between the motherboard parallel port and another board installed on the ISA bus. Run the ECU.
Parallel Port IRQ Config Error	Reconfigure the parallel port.
Parallel Port Compatible Mode Error	Parallel port hardware error. Run the diagnostics, replace the motherboard.
Parallel Port Extended Mode Error	Parallel port hardware error. Run the diagnostics, replace the motherboard.
PASSWORD ERROR MESSAGES	
Invalid Password	Enter the correct password; if it is not known, move jumper J26 on the motherboard.
SYSTEM HALTED!	Message displayed after three incorrect password entries; if the password is not known, move jumper J26 on the motherboard.
SYSTEM ERROR MESSAGES	
CPU Exception Error Has Occurred CPU Exception: xxh POD Checkpoint: xxxh CPU Error Code: xxh Physical Address: xxxx.xxxxh CS:EIP=...	Reinitialize the system; replace the CPU board if the problem persists.
Received 65536 spurious interrupts!! SYSTEM HALTED!!	Reinitialize the system; replace the CPU board if the problem persists.
Unable to clear the error condition	Reinitialize the system; replace the CPU board if the problem persists.
FATAL ERROR, System Halted! BIOS Microcode Update FAIL: CPU x	Reinitialize the system; replace the CPU board if the problem persists.

ERROR MESSAGES	DESCRIPTION
Configuration Bypass Jumper Installed	Jumper J26 is present.
CMOS Battery Lost Power	Discharged RTC CMOS RAM battery condition detected. Replace the motherboard and run the ECU.
CMOS Clock/Calendar Error	The Real Time Clock cannot keep the correct date and time. Run the ROM Setup Utility. If the error persists, replace the RTC chip, then the motherboard.
CMOS Checksum Error	An error has been found during a check on the consistency of the data stored in CMOS RAM. Run the ECU, run the diagnostics, replace the motherboard.
Configuration Memory Checksum Error	Reconfigure the system.
Fail-Safe Timer Error	The EISA timer test has failed. Run the diagnostics, replace the motherboard.
CMOS Video Shadow RAM Config Error	EEPROM configuration error for video shadowing. Run the configurator.
ACFG (Auto Config) Error	Error during the internal self-configuration process. Insufficient system memory or buffer allocation error. Run the ECU to manually solve the configuration conflict.
PCI Configuration Error	
Hardware Error(s) Detected... Run Diagnostics Program	A hardware error has been detected in the system. Run the diagnostics.
Configuration Error(s) Detected... Run System Configuration Program	A configuration error has been detected. Run the ECU.
PnP Configuration Error	Error during the internal self-configuration process. Insufficient system memory or buffer allocation error. Run the ECU to manually solve the configuration conflict.
xxxxh Segment Shadow RAM Disabled/Error	An error has been detected during option ROM shadowing in segment xxxh. Incorrect optional board configuration, run the ECU.
ONBOARD LANCE SCSI CONTROLLER, LANCE PCI GO2109 SCSI CONTROLLER AND ULTRA WIDE PCI GO2172 SCSI CONTROLLER ERROR MESSAGES	
BIOS Not Installed	There are no BIOS-supported SCSI devices connected to the controller.
Host Adapter Configuration Error	SCSI controller configuration error. Run the ECU.
Can't Locate Host Adapter	The Adaptec BIOS is unable to communicate with the SCSI board. Replace the SCSI controller.
Device Connected, but Not Ready	The SCSI device has failed the Test Unit Ready command during initialization. Check the connections and run the test on the device.
Start Unit Request Failed	The SCSI device has failed the Start Unit command during initialization. Check the connections and run the test on the device.
Time-out Failure During SCSI Inquiry Command!	The SCSI controller did not issue the interrupt when the Inquiry SCSI command is sent during initialization. Replace the SCSI controller.
Time-out Failure During SCSI Test Unit Ready Command	The SCSI controller did not issue the interrupt when the Test Unit SCSI command is sent during initialization. Replace the SCSI controller.
Time-out Failure During SCSI Start Unit Command	The SCSI controller did not issue the interrupt when the Start Unit SCSI command is sent during initialization. Replace the SCSI controller.
Invalid Hard Disk CMOS Config Error	Reconfigure the system.
INTERPROCESSOR INTERRUPT ERROR MESSAGES	
APIC interrupt selftest Error	
APIC IPI transmit Error	
APIC Inter-Processor Interrupt Error	

ERROR MESSAGES	DESCRIPTION
VIDEO ERROR MESSAGES	
Video Configuration Error	Configuration error. Run the configurator to change the video configuration.
Video Option ROM Checksum Error	Run the BIOS Flash again or replace the CPU or motherboard.
WARNING MESSAGES	
Warning: Some non-default advanced system performance settings have been chosen. These could cause the system to hang.	Run the configurator. Use the Default option also in the Advanced Features.
MICROPROCESSOR RUN-TIME ERROR MESSAGES (AFTER THE POD)	
ERROR - CPU Machine Check Condition Occurred	An internal CPU failure has occurred. The specific cause and address are indicated in one of the following messages. If the failure is fatal, the message will be preceded by the word LOCKED.
LOCKED	
Interrupt Acknowledge Cycle at Address: xxxxxxxxh	Replace the processor(s) or the CPU board.
Special Cycle at Address: xxxxxxxxh	Replace the processor(s) or the CPU board.
I/O Read Cycle at Address: xxxxxxxxh	Replace the processor(s) or the CPU board.
I/O Write Cycle at Address: xxxxxxxxh	Replace the processor(s) or the CPU board.
Code Read Cycle at Address: xxxxxxxxh	Replace the processor(s) or the CPU board.
Unknown Cycle at Address: xxxxxxxxh	Replace the processor(s) or the CPU board.
Memory Read Cycle at Address: xxxxxxxxh	Replace the processor(s) or the CPU board.
Memory Write Cycle at Address: xxxxxxxxh	Replace the processor(s) or the CPU board.
FATAL ERROR, System is Halted	Last message displayed after the indication of the address and of the type of CPU cycle. Indicates an unrecoverable error.
NMI RUN-TIME ERROR MESSAGES (AFTER THE POD)	
NMI Interrupt: Unknown Source	An error has been detected but not its source; remove the boards installed on the EISA and PCI buses one at a time, then replace the motherboard.
NMI Interrupt: I/O Channel Check in slot: xx	An error has been detected during the check made on the I/O channel of the board installed in slot xx. Replace the board, then the motherboard.
NMI Interrupt: EISA System Software Generated NMI	The EISA subsystem software has generated an NMI. Replace the processor(s), the CPU board, the motherboard.
NMI Interrupt: EISA DMA Bus Time-out in slot: xx	EISA bus timeout error for the board installed in slot xx. Replace the board, then the motherboard.
NMI Interrupt: EISA Failsafe Timer Time-out	EISA Filesafe Timer timeout error. Replace the motherboard.
Unable to Clear the Error Condition	The system is unable to clear the error condition.
System is Halted - Please Reset	Last message displayed after one of the above messages.

NMI ERROR MESSAGES	DESCRIPTION
NMI Interrupt: Data Parity Error (PERR#) NMI Interrupt: Address Parity Error NMI Interrupt: Request Signal Parity Error NMI Interrupt: System Error (SERR#) NMI Interrupt: Target Abort Error NMI Interrupt: Uncorrectable ECC Error	Parity errors on the data and address buses, request signal parity errors, system errors on a determined bus and signalled by a determined component indicate serious system failures
+	
on primary PCI bus These comments on secondary PCI bus follow the NMI on CPU bus interrupt messages in memory array	Reboot the system but if the problem persists replace the motherboard; be sure that the problem is not a consequence of a software that is not in its final version.
+ signalled by:	
Device ID: xx Compatibility PCI Bridge (OPB0) Secondary PCI Bridge (OPB1) Memory Controller (OMC) EISA Bridge (PCEB) Unknown Source	

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Note: *The RAID DPT SCSI controller error messages are indicated in Appendix C, in the section of the specific controller.*

SYSTEM CONFIGURATION UTILITIES

The system configuration utilities consist of one to three programs depending on whether the system is equipped with the RAID SCSI controller or not. Two programs, the EISA Configuration Utility (ECU 3.x) and Storage Manager, are stored on the Orchestra CD-ROM provided in the system Starter Kit. The third program, called DPT Configuration Utility, resides in the firmware of the RAID DPT controller and can therefore be activated directly from the keyboard.

The Storage Manager is described in Appendix F, the DPT Configuration Utility in the DPT controller section in Appendix C, while general information on the Starter Kit as far as software configuration is concerned is provided below.

Note: The Built-In ROM Setup Utility is not available on this system.

ORCHESTRA SYSTEMA CD-ROM

The Orchestra CD-ROM kit consists of the following disks:

- **Orchestra Systema Boot.** 3.5" 1.44 MB diskette which is used to boot to system and access the contents of the Orchestra Systema CD-ROM. This disk also contains the A:\CFG\SYSTEM.SCI file containing the current system configuration.
- **Orchestra Systema Diagnostics.** 3.5" 1.44 MB diskette (five languages) containing a set of low level tests for the hardware modules installed in the system. To run a more extended test on the system, the field engineer can use the System Test diskette which differs from the diagnostic diskette provided in the kit mainly for the addition of certain destructive tests that could be dangerous to be used at user level.
- **Orchestra Systema CD-ROM.** CD-ROM containing all the software that can be installed on the systems, including the available configuration utilities. In an appropriate directory, this CD-ROM also contains a library of EISA and ISA configuration files which includes the *.CFG files for the different expansion boards that can be added to the system and that are therefore not present in the directory of the configurator.

The user interface, called Orchestra Systema, is only available in English. This CD-ROM allows the following major functions:

- Provide information on the configuration of EISA and ISA boards by means of the **EISA Configuration Utility** (ECU).
- Automatically configure the EISA boards.
- Provide information on the jumper settings of the more renowned optional ISA boards.
- Provide information on the resources assigned to PCI and P&P ISA boards.
- By running the **Storage Manager Utility** (available for systems equipped with the RAID SCSI controller), check the hardware configuration of the RAID DPT SCSI controllers and of the devices connected to them, configure Disk Arrays and run SCSI subsystem diagnostics.
- Report of any configuration conflict and attempt to solve it automatically.
- Provide and support the configuration files (CFG) contained on the CD-ROM.
- Create and update the System Configuration Information file (SYSTEM.SCI) on the boot diskette as backup for the system non-volatile memory.
- Provide online documentation relating to the boards installed in the basic module.

- **Install the Resilience Support software package** (only for systems in a resilience configuration) which in turn consists of the OLIHIT and OLISAR software packages.

OLIHIT, together with the swap board, allows the management of dangerous situations caused by high temperatures or by the redundant components present in the system and PEM. The following are checked in particular:

- High temperatures, in the basic module and PEM
- Power supply failures, in redundant systems and PEMs
- Fan failures, in redundant systems and PEMs

When any of the above events occurs, the OLIHIT software takes the following actions:

- Sends messages to the user
- Records the failure in the error log file
- Shuts down the operating system in the more dangerous cases, such as high temperatures or fan failures.
- Automatically turns the system off when the UPS is not present.

OLISAR allows the management of the SAR (Systema Automatic Restart) feature which is a hardware/firmware/software mechanism capable of automatically restarting the system after a hang following hardware/software failures. The main purpose of the OLISAR package is to reduce the time between the moment at which the event occurred and the moment of operator intervention. When enabled and activated, the SAR feature performs the following operations:

- Starts a hardware counter.
- Resets the system when the counter reaches a determined value.

OLISAR can determine the number of resets to be performed before powering off the system and the time span between the system hang and the reset. The SAR feature is initially disabled and can only be enabled via software.

- Install the **Server View** software that provides, within a local area network, an intelligent monitoring and signalling system that allows a visual check to be made on the network servers through a Windows workstation.

CONFIGURATION OF OPTIONAL BOARDS

Any system device requires the availability of resources to use in order to work and communicate with other devices. Basically there is the need to define which interrupts, memory addresses and DMA channels must be assigned to this device. The term device refers to a component integrated on the motherboard, the motherboard installed on the bus and the different peripherals connected to the system. System configuration means assigning these resources without generating conflicts between the different devices.

This product line uses the Plug and Play (PnP) technology that, along with the system BIOS, allows the automatic configuration of PCI and Plug and Play ISA AT boards according to the resources available. Furthermore, thanks to the ECU, this technology allows the automatic configuration of EISA boards and also provides configuration information for earlier ISA AT boards that are configured by means of jumpers or DIP-switches so that conflicts with other system devices are avoided.

CONFIGURATION OF PCI AND ISA AT PLUG AND PLAY BOARDS

These boards are implemented with specific hardware through which they can communicate with the system. By means of this hardware, the boards can inform the system of the resources they need and of possible alternatives.

The system BIOS implements a code which is capable of supporting this technology. Each time the system is activated, during the POD this code controls all the expansion boards and devices installed, detects the resources that are available in NVRAM and automatically assigns these resources in the best possible way. In case of unresolvable conflicts during the division of these resources, the BIOS is capable of relinquishing the control over to the EISA Configuration Utility (ECU). The utility will require operator intervention who at this point will decide how to solve the conflicts.

During the POD configuration phase all the resources that can be automatically modified by the BIOS are considered as available. Therefore by installing a new board it may be possible that the resources assigned to PCI and ISA PnP boards previously installed in the system are changed.

At the end of installation it is possible to activate the Built-in ROM Setup or EISA Configuration Utility which, along with the Configuration Manager, displays the resources that have been automatically assigned by the BIOS. Some of these resources can also be modified by using the utility, and any changes made are only accepted if they do not generate conflicts with other devices. If they do, the previous BIOS values are restored the next time the system is powered on.

Even when a PCI or ISA PnP board is removed, this board needs to be physically removed from the bus and the system rebooted so that it is automatically cleared from the configuration.

Note: *Even though being PCI boards, the SCSI controllers have certain parameters (such as the termination or ID) that must be set or of which the default values have to be checked by means of the ECU or, in the case of the RAID DPT board, the DPT Configuration Utility.*

CONFIGURATION OF EISA AND ISA BOARDS

The EISA Configuration Utility (ECU) allows the automatic configuration of EISA boards and guides the user in the configuration of non-Plug and Play ISA AT boards.

Each optional EISA or ISA board comes with a diskette containing a file (.CFG extension) with information on the resources needed for the configuration of the board and on the alternative values. The ECU is capable of reading this information and of assigning automatically, in the case of EISA boards, or suggesting, in the case of ISA boards, the resources for the determined board without generating any conflict. If there are jumpers or DIP-Switches on the board (usually EISA boards do not have any), the ECU is capable of indicating any setting according to how the resources have been assigned.

The system configuration utility has a database with the configuration data of the more common EISA and ISA AT boards. Before physically installing a board, its related .CFG file needs to be added to the database if it is not already present.

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During the ECU configuration phase, all the resources that can be modified automatically are considered as being available. Therefore by installing a new board it may be possible that the resources assigned to boards previously installed in the system are changed. In the case of ISA boards with jumpers or DIP-Switches, a check must be made to see whether the settings are still valid or not. To avoid this inconvenience, by means of a specific command, block all the configuration parameters of the boards that must be configured manually through jumpers or DIP-Switches, or block all the configuration parameters assigned. The configuration needs to be unblocked during the solving of any conflict between resources.

At the end of the configuration process all data are stored in the motherboard EEPROM so that the system resources are checked each time the system is bootstrapped. The data are also stored in the System Configuration Information file (SYSTEM.SCI) contained in the System Configuration diskette or in the Orchestra Systema Boot diskette. This file is automatically updated at each successive configuration.

Note: *All User Disk functions are self-explanatory and aided by an online Help facility which can be invoked by pressing the F1 key. The Utility can therefore be run correctly by simply following the instructions displayed.*

NOTES ON THE CONFIGURATION OF LINE BOARDS WITH AT INTERFACE

The Multiport and LAN/WAN boards with AT interface installed in this system can only be mapped in megabyte F since the memory map views the first megabyte as being entirely occupied by system memory and therefore there is no way of creating a 128 KB memory gap from 512 to 640 KB and a 96 KB gap from 800 to 896 KB.

The installation of EISA boards does not require, however, the opening of system memory spaces as they can be mapped beyond the maximum memory capacity that can be installed in the system.

ORCHESTRA CD-ROM EVOLUTION

DATE	REL.	REASON FOR CHANGE
7/96	1.4	<p>New Orchestra Systema CD-ROM code 2692506 N and boot floppy code 2693255 R. The following main programs are on the CD-ROM:</p> <ul style="list-style-type: none"> - Configuration Utility rel 1.02 based on MCS ECU ver. 3.01. - EVD drivers 1.07 upd2 - SCSI drivers rel 1.21L - Storage Manager rel. 2.2 - Resilience Support rel. 2.4 with SAR support except for all operating systems - Server View rel 2.1 - UPS Power Chute rel 4.2.1 driver for the following O.S.: SCO UNIX 3.2.4.2, SCO Open Server R5.0, SCO UnixWare 2.1, OS/2 R2.1 V2.11, OS/2 R3.0 Warp. - UPS Power Net rel 1.0 driver for the following O.S.: Windows NT 3.51 NetWare 3.12, NetWare 4.1. - ZNIX V1.0 driver for the ZX312 LAN controller. <p>This version of Orchestra is also used on the SNX 1x0/S and 460/RS/RM; the specific software for each system, for example the Configuration Utility, is automatically loaded.</p>
9/96	1.5	<p>New Orchestra CD-ROM release code 2692506 N-01 and boot floppy code 2693280 S with the following differences:</p> <p>New release 1.5 code 2692506 N-01 with the following differences:</p> <ul style="list-style-type: none"> - Configuration Utility rel. 1.04: <ul style="list-style-type: none"> - OLI7850.ovl, OLI7870.ovl: some options like "Enable Translate for HDU > 1 GB" are always set to Enabled; the option "Include in BIOS Scan" is reintroduces. - NetStrada 5000 system name added. - Support for the AIC 7880 Ultra Wide SCSI controller. - All the Dagger/Lance/Ultra configuration files include BIOS Adapter enabling and boot enable/disable from CD. - Possibility of configuring the DPTcontroller I/O port to FC00/F400/EC00 E400/DC00/D400/CC00/C400 when the board is not installed on the primary bus so as to prevent the DPT SmartROM from hanging. - Solves the problems with the Help in the different operating systems. <p>This version of Orchestra is also used on the SNX 1x0/S and 460/RS/RM; the specific software for each system, such as the Configuration Utility, is automatically loaded.</p>
See the Note	1.6	<p>New Orchestra CD-ROM release code 2692535 Z and boot floppy code 2692138 N for the SNX 160/RS/RM and NetStrada 5000, with the following differences:</p> <ul style="list-style-type: none"> - Configuration Utility rel 1.05: <ul style="list-style-type: none"> Compatible with BIOS 1.05 (SNX 160/RS/RM) and BIOS 1.02 (NetStrada 5000) - The "Primary Operating System" option includes the "Multi-Processor" and "Single Processor" entries in compliance with the operating system kernel. - Support for NT 4.0. - The package SMP for NetWare 4.1 is removed (the multiprocessor version is rel. 4.11). - Support for the Ultra SCSI controller. - Resilience Support rel 2.6 <ul style="list-style-type: none"> - Description of the NetStrada 5000 and 7000 in the documentation provided. - Server View rel 2.3 - Acknowledgement and management of the NetStrada 5000 and 7000. - Server support with the OS/2 operating system. - Improvement to the management station graphical interface. <p>This version of Orchestra is also used on the SNX 1x0/S, 460/RS/RM, NetStrada 7000; the specific software for each system, such as the Configuration Utility, is automatically loaded.</p> <p>Note: Introduced on the first series NetStrada 5000 systems (December '96), will be used on the SNX 160/RS/RM when the stocks are exhausted.</p>

USER DIAGNOSTICS EVOLUTION

DATE	REL.	REASON FOR CHANGE
7/96	1.00	New User Diagnostics.
9/96	1.03	New User Diagnostic release: - HDU_DIA works with 35 HDUs connected instead of the 12 of the first version. - Solved the problem with the testing of the second CPU - Corrected the problem with the test pattern of MEM_DIA.
12/96	1.04	New User Diagnostic release: - CDR_DIA, DAT_DIA, HDU_DIA, SPCI_DIA, STR_DIA link with SCSI library ver. 0.32 which corrects the problem with program hangs when a DAT is installed.
3/97	1.05	New User Diagnostic release: - CDR_DIA, DAT_DIA, HDU_DIA, SPCI_DIA, STR_DIA, RDPT_DIA link with SCSI library ver. 0.33 which solves the problems occurring when the DPT controller works with IRQ9 or IRQ14. - Sony DDS2 DAT diagnostic support.

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SYSTEM TEST EVOLUTION

DATE	REL.	REASON FOR CHANGE
7/96	1.0	New System Test.
9/96	1.03	New System Test release: - HDU_DIA works with 35 HDUs connected instead of the 12 of the first version. - Solved the problem with the testing of the second CPU - Corrected the problem with the test pattern of MEM_DIA
12/96	1.04	New User Diagnostic release: - CDR_DIA, DAT_DIA, HDU_DIA, SPCI_DIA, STR_DIA link with SCSI library ver. 0.32 which corrects the problem with program hangs when a DAT is installed. - RDPT_DIA now displays the amount of memory on the DPT controller.

REDUNDANCY

A system is considered as being redundant when it is equipped with a RAID SCSI controller for HDU management, two power supplies and two fan units; redundancy is managed by the Swap board.

The motherboard is equipped with the following error detection measures:

- 1 Temperature sensor on the motherboard itself
- 2 Temperature sensor on the swap board detecting the temperature in the disk area
- 3 Redundancy failure indication when a fan no longer works
- 4 Redundancy failure indication when a power supply no longer works.

These error conditions are reported on a specific I/O port on the motherboard. Failures 1-2-4 cause the system to shutdown and power off, in which case the type of failure is stored in a file in the operating system. System failures of this kind are signalled by the SYS FAULT LED on the control panel.

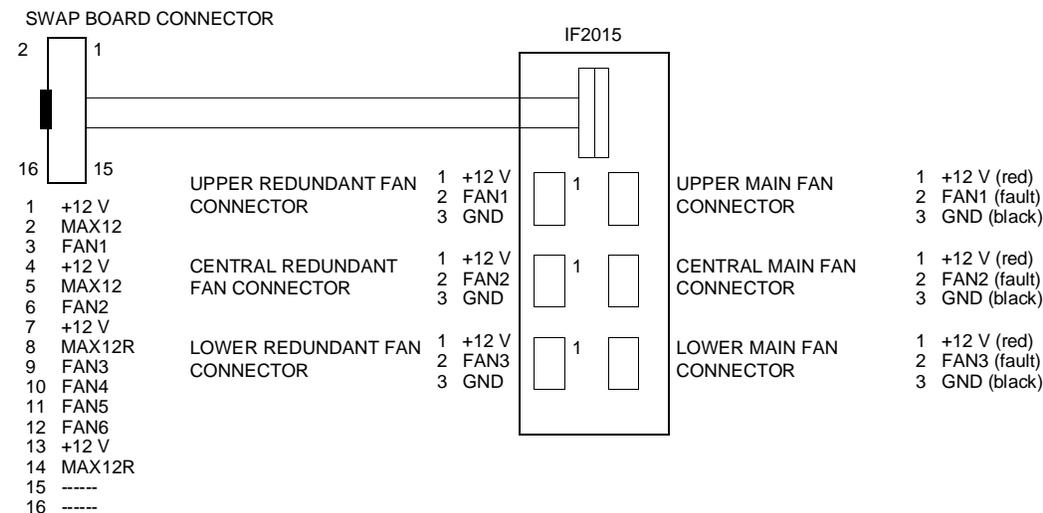
The redundancy kit contains: one PS45 power supply, three slow-type fans (one fan if the kit is intended for a PEM), the power supply parallelism board (IF2025/35 for RS systems, IF2034 for RM systems), one motherboard-power supply parallelism board connection cable, one current share cable and one power cord.

FANS

These systems are equipped with fans NMB 4715KL-04W-26, named B26 (code 564151 W). Fans B26 have an internal temperature sensor that make them turn slowly at environmental temperatures but increasing their rotational speed as the temperature rises. These fans are compatible with Swap Board IF2012 lev. 03S1 or IF2031 lev 01 and later updates.

The main and redundant fans are always operational. When any one fails, the operator is informed so that the failed fan can be replaced with an identical one (B26). The three main fans are located towards the rear of the system (board area) while the redundant fans are located at the front.

The main and redundant fans are connected through the fan power supply distribution board IF2015.



BOARD IF2015 (P.c.b. code 654297 B) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
4/95	Nasc	562145 W	New board.	Factory

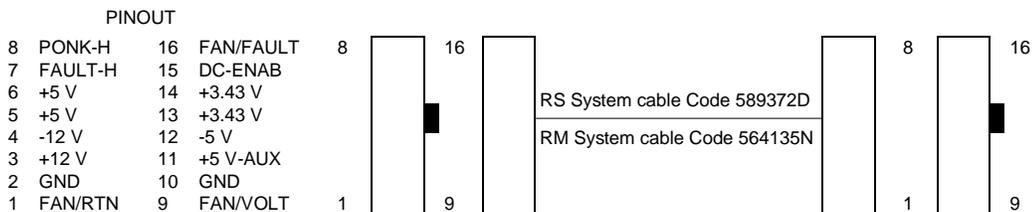
POWER SUPPLIES

This system is equipped with the PS45 power supply with which it can also be used in redundant configurations where the main power supply is connected to another PS45. In redundant configurations, both power supplies work at about 50% of their full potential but when one of these fails, the other will automatically cover the activities of the one no longer in use. Both power supplies are simultaneously powered on through the ON/OFF switch which changes the status of the signal that enables power supply operation. The main and redundant power supplies must be connected using the current share cable so that they both work at about 50 % of their full potential when both are installed.

The power supply parallelism board is required for the connection of the two power supplies. This board parallels the output voltages from the power supply and distributes them to the motherboard and swap board. This board has four red LEDs through which it is possible to keep under control and verify the operation of the entire power supply assembly.

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INDICATION	LED	LED STATUS
Normal operation: the FAULT LED is off indicating that both power supplies are working correctly.	+5 V FAULT POK2 POK1	ON OFF ON ON
The FAULT LED is on to indicate the failure of one of the two power supplies. The POK1 LED is off indicating the failure of the first power supply in which case the second power supply is still working correctly.	+5 V FAULT POK2 POK1	ON ON ON OFF
The FAULT LED is on to indicate the failure of one of the two power supplies. The POK2 LED is off indicating the failure of the second power supply in which case the first power supply is still working correctly.	+5 V FAULT POK2 POK1	ON ON OFF ON

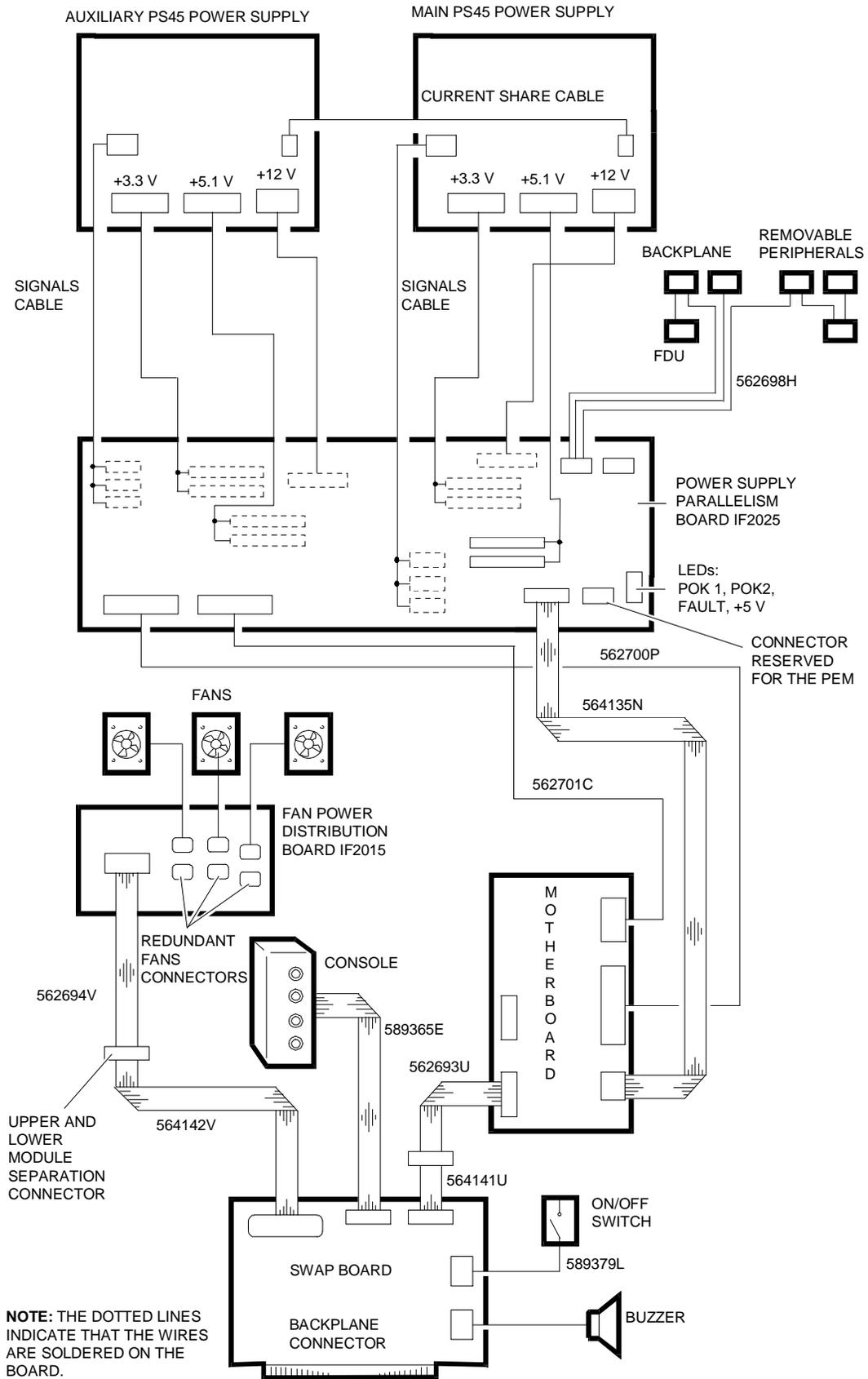
Motherboard-Power Supply Parallelism Board Connection Cable**BOARD IF2035 (P.c.b code 654394 C) EVOLUTION**

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
3/96	Nasc	562408 F	New board which replaces the IF2025 and includes its wirings.	Factory

BOARD IF2034 (P.c.b code xxxxxxx) EVOLUTION

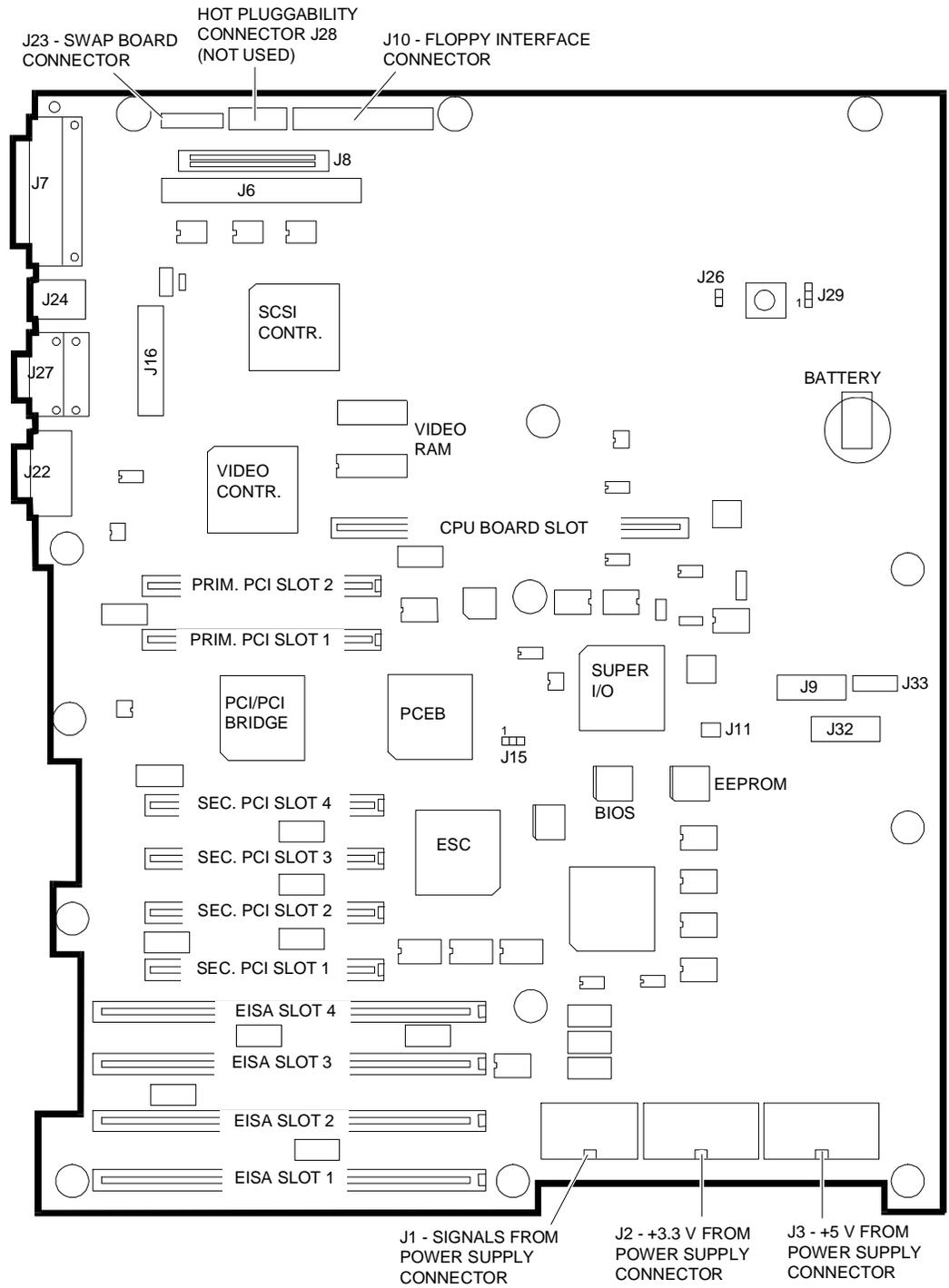
DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
7/95	Nasc	562407 W	New board for the systems and for the PEM RM.	Factory

ELECTRICAL CONNECTIONS IN REDUNDANT RM SYSTEMS



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MOTHERBOARD BA2298



- | | |
|--|---|
| <p>J7 Double connector:
High - LPT1 parallel port
Low - External SCSI Narrow</p> <p>J24 Double connector:
High - keyboard, Low - mouse</p> <p>J27 Double connector:
High - First COM1 serial port
Low - Second COM2 serial port</p> <p>J22 VGA video interface connector</p> | <p>J8 Internal SCSI Wide connector</p> <p>J6 Internal SCSI Narrow connector</p> <p>J16 Feature Connector</p> <p>J9 Remote Power Control connector for remote diagnostics (not used)</p> <p>J32 Intel HOBBS remote diagnostics board interface connector (not used)</p> <p>J33 Remote diagnostics connector (not used)</p> |
|--|---|

JUMPERS

CONFIGURATION BY-PASS JUMPER	
J26	DESCRIPTION
ON	The system is set to the default configuration and any configuration stored in the configuration EEPROM is ignored along with all security features.
OFF *	Normal setting where at power on the system is set to the configuration stored in EEPROM.

BIOS FLASH EPROM WRITE ENABLE JUMPER	
J15	DESCRIPTION
PINs 1-2 ON *	Enables writes to the BIOS Flash EPROM. This is the normal setting where the memory write enable signal is under software control.
PINs 2-3 ON	Disables writes to the BIOS Flash EPROM. This is the protection position where Flash EPROM programming is blocked.

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HOBBS SECURITY JUMPER	
J29	DESCRIPTION
OFF	Not used, no jumper installed. PINs 1-2 ON = Hardware Security, PINs 2-3 ON = Programmable Security

BATTERY POWER JUMPER	
J11	DESCRIPTION
ON	Used only at the factory to disconnect the battery from the In-Circuit-Test circuitry. Usually set to ON.

VIDEO CONTROLLER

The onboard video controller is a Trident SVGA TGUI9440-1 implemented on the primary PCI bus. A 1 MB video memory is available. The following table lists the supported resolutions.

Standard Video Mode

Mode	Resolution/Colors	Pixel Rate (MHz)	Horizontal Freq. (KHz)	Vertical Freq. (Hz)	Memory (KB)	Address
0H, 1H	320x200-16	28	31.4	70	256	B800
2H, 3H	640x200-16	28	31.4	70	256	B800
4H, 5H	320x200-4	25	31.4	70	256	B800
6H	640x200-2	25	31.4	70	256	B800
7H	720x350-mono	28	31.5	70	256	B000
DH	320x200-16	25	31.4	70	256	A000
EH	640x200-16	25	31.4	70	256	A000
10H	640x350-16	25	31.4	70	256	A000
11H	640x480-2	25	31.4	60	256	A000
12H	640x480-16	25	31.4	60	256	A000
13H	320x200-256	25	31.4	70	256	A000

Extended Video Mode

Mode	Resolution/Colors	Pixel Rate (MHz)	Horizontal Freq. (KHz)	Vertical Freq. (Hz)	Memory (KB)	Address
50H	640x480-16	25	31.5	60	256	B800
51H	640x473-16	25	31.5	60	256	B800
52H	640x480-16	25	31.5	60	256	B800
53H	1056x350-16	40	31.3	70	256	B800
54H	1056x480-16	40	31.3	60	256	B800
55H	1056x473-16	40	31.3	60	256	B800
56H	1056x480-16	40	31.3	60	256	B800
57H	1188x350-16	45	31.3	70	512	B800
58H	1188x480-16	45	31.3	60	512	B800
59H	1188x473-16	45	31.3	60	512	B800
5AH	1188x480-16	45	31.3	60	512	B800
5BH_1	800x600-16	36	35.2	56	256	A000
5BH_2	800x600-16	50	48.1	72	512	A000
5DH_1	640x480-256	25	31.6	60	512	A000
5DH_2	640x480-256	32	38.2	72	512	A000
5EH_1	800x600-256	36	35.5	56	512	A000
5EH_2	800x600-256	50	48.3	72	512	A000
5FH_1	1024x768-16	45	35.5	87i	512	A000
5FH_2	1024x768-16	65	48.5	60	512	A000
5FH_3	1024x768-16	75	56.5	70	512	A000
60H	1024x768-16	45	35.7	87i	512	A000
61H	1024x768-16	45	37.3	70i	512	A000
6AH_1	800x600-16	36	35.2	56	256	A000
6AH_2	800x600-16	50	48.1	72	512	A000
6BH	320x200-16M	40	36.1	70	512	A000
70H	512x480-32	40	31.4	60	512	A000
71H	512x480-64	40	31.4	60	512	A000
72H	640x400-32K	50	30.2	70	512	A000
73H	640x400-64K	50	30.2	70	512	A000
7EH	320x200-32K	25	31.4	70	512	A000
7FH	320x200-64K	25	31.4	70	512	A000
5CH	640x400-256	25	31.6	70	1	A000
62H_1	1024x768-256	45	35.5	87i	1	A000
62H_2	1024x768-256	65	48.5	60	1	A000
62H_3	1024x768-256	75	56.5	70	1	A000
62H_4	1024x768-256	80	59.5	75	1	A000
63H_1	1280x1024-16	75	46.9	87i	1	A000
63H_2	1280x1024-16	108	63.0	60	1	A000
65H_1	1600x1200-16	108	54.5	87i	1	A000
6CH	640x480-T	75	31.4	60	1	A000
74H_1	640x480-32K	50	31.4	60	1	A000
74H_2	640x480-32K	65	40.1	72	1	A000
75H_1	640x480-64K	50	31.4	60	1	A000
75H_2	640x480-64K	65	40.1	72	1	A000
76H	800x600-32K	72	35.2	56	1	A000
77H	800x600-64K	72	35.2	56	1	A000

SCSI CONTROLLER

The SCSI controller embedded on the motherboard is implemented on the PCI bus and provides a fast single-ended SCSI Wide (16-bit) channel based on the Adaptec AIC7870 (Lance) controller. This chip is a bus master interface controller that can take control of the bus and transfer information from the system memory at the maximum speed allowed on the PCI bus (133 MB/sec), while the data is transferred from/to the SCSI bus at 20 MB/sec since 16-bit (Wide) transfers are involved instead of 8-bit (Narrow) transfers. The Lance controller also supports the standard 8-bit Narrow peripherals.

This board has the following connectors:

- Internal 68-pin high density Wide connector J8 used for connecting the internal SCSI Wide HDUs through the SCSI Wide backplane.
- Internal 50-pin Narrow connector J6 used for connecting the internal SCSI Narrow removable peripherals.
- Internal 50-pin high density Narrow connector J25 used for connecting external SCSI Narrow peripherals, PEM excluded.

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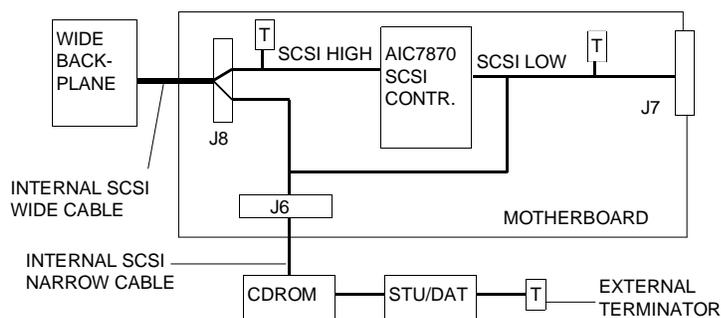
The peripherals cannot be connected to all three SCSI connectors at the same time. The maximum configuration allows the simultaneous connection to two of the three connectors: to both internal connectors (Wide and Narrow), to the internal Narrow and external Narrow connectors, or to the internal Wide and external Narrow connectors. Up to 16 SCSI devices can be connected to the SCSI Wide channel, controller included. These devices can be assigned with SCSI IDs from 0 to 15, but this system only uses SCSI IDs from 0 to 7. The SCSI controller ID must always be set to 7 by means of the ECU.

The SCSI terminators are on the motherboard and are active. The terminators on the high part of the Wide bus are always enabled while those on the low part of the bus, shared between Wide and Narrow, are usually enabled but are automatically disabled if connections are made to two of the three onboard SCSI connectors.

The controller is configured by means of the ECU and in the same way as described for the GO2109 Lance SCSI controller in Appendix C. There are no SCSI configuration jumper settings to be made on the motherboard.

The rules for configuring the SCSI channel on the SNX 160/RS/RM NEW are described in Appendix J.

The following block diagram shows the SCSI channel path.



SEQUENCE OF BOARDS INSTALLED IN THE MOTHERBOARD SLOTS

Board Name	Max. No. of Boards	Slot	Connector
CPU BOARD BUS			
CPU board (always installed)	1	CPU slot	J12
PRIMARY PCI BUS			
Full size PCI board	2	Slot 1	J21
		Slot 2	J25
SECONDARY PCI BUS			
Full size PCI board (PCI/EISA shared slot)	1	Slot 1	J17
Full size PCI board	3	Slot 2	J18
		Slot 3	J19
		Slot 4	J20
EISA BUS (All bus master slots)			
Full size EISA/ISA board	3	Slot 1	J4
		Slot 2	J5
		Slot 3	J13
Full size EISA /ISA board (PCI/EISA shared slot)	1	Slot 4	J14

Notes:

- The PCI expansion boards can be installed in either the primary or secondary PCI slots, indifferently; there are no functional differences.
- Primary PCI slot (J17) and EISA slot 4 (J14) are considered as a single, shareable, slot since they are both physically close together. In this case only one board can be installed; PCI boards are installed in the PCI slot while EISA, ISA or P&P ISA boards are installed in the EISA slot.
- The PCI and EISA slots have no priorities.
- The DPT SCSI controllers must be installed in the following order; the first board in primary PCI slot 1, the second board in primary PCI slot 2 while the third board in secondary PCI slot 4.

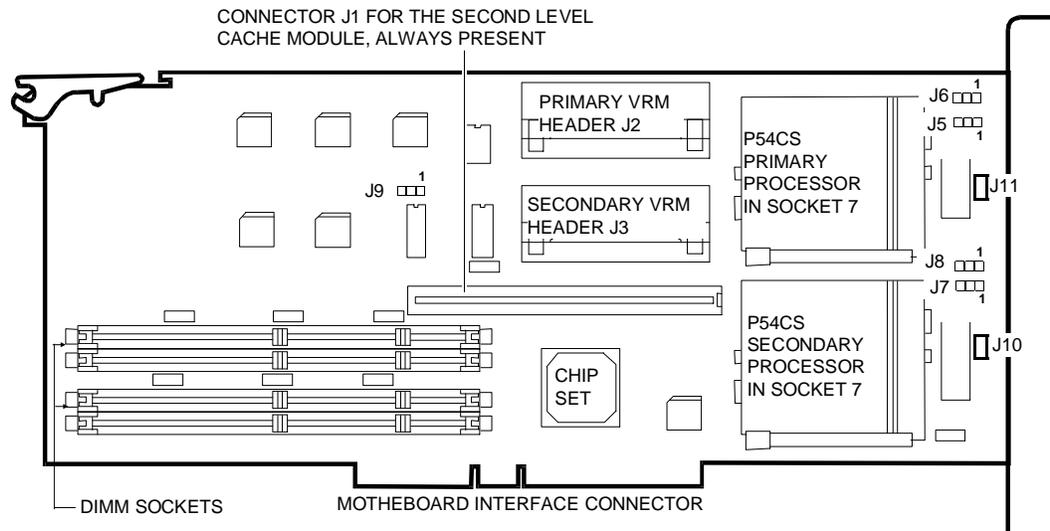
BOARD BA2298 (P.c.b code 654519 H) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
7/96	Nasc	212707 B	New board. The first BIOS release is 1.04 code 212732 T lev Nasc. The BIOS evolutions are described further on.	Factory
9/96	01		Failures (hang-ups and PANIC) occurring with different ISA boards. Add a 1 KOhm SMD (0805) resistor R408 between pin 3 of diode D8 (CHRDY#) and pin 2 of diode D20 (VCC). This inconvenience is only present on the 34 machines under controlled distribution. On these machines the update is only made when indicated.	Factory
2/97	02		Improvements made to the performance of the Trident video controller; do not fit the 4.7 KOhm resistor in position R232.	Factory

EVOLUTION OF BIOS WE61 FOR BA2298

DATE	LEV.	BIOS	CODE	REASON FOR CHANGE
7/96	Nasc	1.04 WE61	212732 T	New BIOS. The compatible levels are: Motherboard Rev. E or later, Keyboard controller 8.50 or later.
11/96	01	1.05 WE61		New BIOS release: - Handling of 64 MB and 128 MB DIMMs. - Handling of CPU frequencies on multiprocessor systems. There are the following restrictions: - Only the 166 MHz system clock is handled. - The Configuration Lock feature is not handled The BIOS is available in the I.H.D. web site.
2/97	02	1.06 WE61		New BIOS release: - Solves the incorrect handling of the year 2000 - Solves the malfunction with 64 MB and 128 MB memory sizes - Handling of the AIC7880 SCSI controller.

DUAL PROCESSOR CPU BOARD UC2010



Note: The name of board UC2010 remains the same for the versions equipped with a 133 MHz, 166 MHz or 200 MHz P54C processor.

Microprocessor

One or two microprocessors can be installed on this board. The basic configuration comes with only one processor installed, with the possibility of installing an optional second processor. This board can host a 133/66 MHz Pentium 133, 166/66 MHz Pentium 166 or a 200/66 MHz Pentium 200 processor as either the primary or secondary CPU; the primary processor is always present while the second processor, which must be identical to the first, is optional. Both processors are installed in the two ZIF Socket 7s and act as either the primary or secondary processor depending on the socket in which they are installed. In fact, during system boot the main processor acknowledges the presence of a processor installed in the second socket and automatically sets the handshake protocol. The processors have an internal 16 KB primary cache. The primary processor can be optionally replaced by an Intel OverDrive processor up to the P55CT. This board can host VRE or Standard mode processors. In the VRE mode, the processors must be powered with +3.45 V while in the Standard mode they must be powered with +3.3 V. For each of the two processors the board is equipped with a 30-pin VRM header connector for the installation of a separate VRM (Voltage Regulator Module) so that the processor can be powered in the VRE mode. VRM Header connector J2 is reserved for the primary processor while VRM Header connector J3 is reserved for the secondary processor.

The VRM is a DC/DC converter which is installed in the VRM header connector and provides power to the core and to the CPU I/O. Usually the system only provides the +3.3 V required by the 75 MHz to 133 MHz Pentium P54; besides this frequency, the P54 processors require a VRM to provide +3.45 V to the processor core and I/O. For the P55 processors only, a VRM is required to separate the 2.5 V power supply to the CPU core from the I/O power supply which remains at +3.3 V.

For the P54 processors, the VRM draws the +3.45 V (3.4 V - 3.6 V) from the +5 V provided by the power supply.

A shorting block is inserted into the VRM header connector for the Pentium processors that are powered in the +3.3 V Standard mode (Pentium 133). This shorting block simply links the +3.3 V from the processor power supply instead of the voltage regulator. The Pentium 166 and Pentium 200 processors must be powered in the VRE mode (3.4 V - 3.6 V) and therefore a specific VRM named AL2021 must be inserted into the VRM header connector corresponding to each of the processors.

Note: Together with the VRM header connector, the Socket 7 provides total compatibility with the future Intel processors up to the P55.

The board gives the possibility of selecting the ratio between processor core and bus clocks. Selection is made using 3-pin jumpers J5 and J6 for the primary processor, and jumpers J7 and J8 for the secondary.

PRIMARY PROCESSOR				
JUMPER J6	JUMPER J5	BUS/CORE FREQUENCY	BUS/CORE RATIO	NOTES
1-2	1-2	66/100 MHz	2/3	Not used
1-2	2-3	66/133 MHz	1/2	For the 133 MHz SNX 160
2-3	1-2	66/200 MHz	1/3	For the 200 MHz SNX 160
2-3	2-3	66/166 MHz	2/5	For the 166 MHz SNX 160

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SECONDARY PROCESSOR				
JUMPER J8	JUMPER J7	BUS/CORE FREQUENCY	BUS/CORE RATIO	NOTES
1-2	1-2	66/100 MHz	2/3	Not used
1-2	2-3	66/133 MHz	1/2	For the 133 MHz SNX 160
2-3	1-2	66/200 MHz	1/3	For the 200 MHz SNX 160
2-3	2-3	66/166 MHz	2/5	For the 166 MHz SNX 160

Note: It is important to set these jumpers so that the same frequency is assigned to both the primary and secondary processors. The correct frequency must be selected according to the type of processor installed. In case the wrong frequency is selected, the processor speed may differ from the one specified (for example, a Pentium 166 whose jumpers are set for a 133 MHz clock will work with a clock reduced to 133 MHz while if the jumpers are set for a higher clock the board will not work). The jumpers are set at the factory and their setting must not be changed.

The processors are adequately cooled down by a passive heatsink fitted directly on the component itself. The active heatsink fan connectors J10 and J11 are therefore not used on these systems.

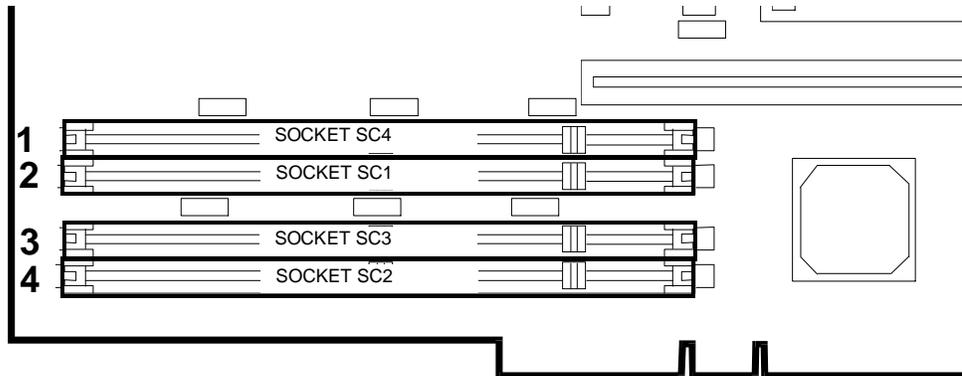
Second Level Cache

As integration to the processor internal cache, 512 KB of second level cache are always present on the board. This cache is provided by a write-back, no parity, burst synchronous static RAM module which is inserted into connector J1 on the CPU board. The cache controller is embedded in the Triton II chipset. The PCI and EISA memory areas above the first MB cannot be cached. Jumper J9 is set differently according to the size of the second level cache. This setting is made at the factory and must not be changed.

JUMPER J9 SETTING	DESCRIPTION	NOTES
Pins 1-2	512 KB cache	Setting to be used
Pins 2-3	256 KB cache	Not used

MEMORY EXPANSION DIMMs

The CPU board has four 168-pin sockets for the installation of 3.3 V DIMMs. The memory controller in the chipset supports fast page mode parity checking or ECC DIMMs, or no parity EDO or ECC DIMMs. The memory controller on these systems is programmed to support fast page mode DIMMs with ECC checking. When DIMMs are either installed or removed, simply power on the system again and run the ECU; there are no hardware jumper settings to be made.



The memory configuration rules are listed below:

- The system sees its memory as being divided into four banks (1, 2, 3, 4). Each bank consists of one socket on the CPU board. Bank 1, socket SC4; Bank 2, socket SC1; Bank 3, socket SC3; Bank 4, socket SC2. The DIMMs can also be installed individually.
- DIMMs of different capacity can be installed on the same board.
- The minimum memory configuration is 32 MB expandible to 512 MB.
- Always install the DIMMs starting from bank 1 and proceed in the following order: socket SC4, SC1, SC3 and SC2.
- The EXM 3V032 (4 Mbit x 72) DIMMs cannot be used with 3V064 (8 Mbit x 72) and 3V128 (16 Mbit x 72) DIMMs. There are no compatibility problems when using EXM 3V032S DIMMs.

The ECC DIMMs that can be used are listed below:

PDG NAME	SIZE	MEMORY EXPANSION KIT
EXM 3V008	8 MB	One 1 Mbit x 72 bit, 60 ns, 3.3 V DIMM.
EXM 3V016	16 MB	One 2 Mbit x 72 bit, 60 ns, 3.3 V DIMM.
EXM 3V032	32 MB	One 4 Mbit x 72 bit, 60 ns, 3.3 V DIMM.
EXM 3V032S	32 MB	One 4 Mbit x 72 bit, 60 ns, 3.3 V DIMM.
EXM 3V064	64 MB	One 8 Mbit x 72 bit, 60 ns, 3.3 V DIMM.
EXM 3V128	128 MB	One 16 Mbit x 72 bit, 60 ns, 3.3 V DIMM.

The following table indicates some of the possible memory configurations.

TOTAL MEMORY	BANK 1	BANK 2	BANK 3	BANK 4
	SOCKET SC4	SOCKET SC1	SOCKET SC3	SOCKET SC2
32 MB	8 MB	8 MB	8 MB	8 MB
32 MB	8 MB	8 MB	16 MB	

TOTAL MEMORY	BANK 1	BANK 2	BANK 3	BANK 4
	SOCKET SC4	SOCKET SC1	SOCKET SC3	SOCKET SC2
48 MB	8 MB	8 MB	16 MB	16 MB
56 MB	8 MB	16 MB	16 MB	16 MB
48 MB	8 MB	8 MB	32 MB	
80 MB	8 MB	8 MB	32 MB	32 MB
104 MB	8 MB	32 MB	32 MB	32 MB
80 MB	8 MB	8 MB	64 MB	
144 MB	8 MB	8 MB	64 MB	64 MB
200 MB	8 MB	64 MB	64 MB	64 MB
144 MB	8 MB	8 MB	128 MB	
272 MB	8 MB	8 MB	128 MB	128 MB
392 MB	8 MB	128 MB	128 MB	128 MB
32 MB	16 MB	16 MB		
48 MB	16 MB	16 MB	16 MB	
64 MB	16 MB	16 MB	16 MB	16 MB
64 MB	16 MB	16 MB	32 MB	
96 MB	16 MB	16 MB	32 MB	32 MB
112 MB	16 MB	32 MB	32 MB	32 MB
96 MB	16 MB	16 MB	64 MB	
160 MB	16 MB	16 MB	64 MB	64 MB
208 MB	16 MB	64 MB	64 MB	64 MB
160 MB	16 MB	16 MB	128 MB	
288 MB	16 MB	16 MB	128 MB	128 MB
400 MB	16 MB	128 MB	128 MB	128 MB
32 MB	32 MB			
64 MB	32 MB	32 MB		
96 MB	32 MB	32 MB	32 MB	
128 MB	32 MB	32 MB	32 MB	32 MB
64 MB	64 MB			
128 MB	64 MB	64 MB		
192 MB	64 MB	64 MB	64 MB	
256 MB	64 MB	64 MB	64 MB	64 MB
256 MB	64 MB	64 MB	128 MB	
384 MB	64 MB	64 MB	128 MB	128 MB
448 MB	64 MB	128 MB	128 MB	128 MB
128 MB	128 MB			
256 MB	128 MB	128 MB		
384 MB	128 MB	128 MB	128 MB	
512 MB	128 MB	128 MB	128 MB	128 MB

BOARD UC2010 (P.c.b. code 654533 X) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
7/96	Nasc	212782 W	New board with a Pentium P54CS processor	Factory
9/96	01		The system crashes during the stress test of the OS/2 operating system. Replace GAL 22V10-10 in pos U3 - WP80 with GAL 22V10-10 - WP87.	Factory
12/96	02		Triton II chipset (pos U2) evolution from step A2 to step A3.	Factory

NOTES AND LIMITATIONS

CONFIGURATION

- If the user decides to not use some of the HDUs present in the system and removes these from the frame, these drives must be removed completely to avoid that the HDU slides prevent the hot swapping feature from working.
- The EXM 3V032 (4 Mbit x 72) DIMMs cannot be used with 3V064 (8 Mbit x 72) and 3V128 (16 Mbit x 72) DIMMs. There are no compatibility problems when using EXM 3V032S DIMMs.
- In the case of a MAIN system + PEM with RAID configurations consisting of disks distributed among several channels of the same controller (DPT), all system power ons and power offs must be made through the UPS which supports the MAIN system and PEM; it is therefore suggested to lock the ON/OFF switches of both boxes to the ON position using the appropriate keys.
- To activate the LAN test with the ZX312 and OC2315 controllers, due to problems with the current driver releases the boards must be plugged into the primary PCI bus only.
- BIOS release 1.4 that comes with the product does not support the SAR (Systema Automatic Restart) feature.
- Hot swapping is currently not supported.
- The Panasonic 4x CD-ROM drive must be used; read problems occur with the Sony 76S, no longer in production.
- When using network cards installed in PCI slots, run the Configuration Utility to check that the I/O addresses of the boards are not at ISA addresses or aliases (for example, 500H, 600H, 700H).
- If the system has a RAID DPT controller installed in any secondary PCI bus slot, run the Orchestra Configuration Utility and configure its I/O port address at FC00H. When the system is rebooted and other boards are installed in the PCI bus slots, ignore if an I/O port address other than FC00H is displayed for the DPT controller during the POD.
- The 128 KB gap between 512 and 640 KB does not exist within mega 0 of basic memory and therefore the DPM boards cannot be mapped in that area.

OPERATING SYSTEMS

- With the SCO 3.2.4.2 and SCO Open V operating systems and when the same kind of SCSI controllers are installed (for example two Lances), the STU and CD-ROM must be connected to the same channel as the HDUs, STU ID must be set to 2 and the CD-ROM ID must be set to 5 thus loosing two HDU bays. There are no restrictions if the removables and HDUs are connected to two different kinds of SCSI controllers (for example the removables to the Lances and the HDUs to the RAID DPT).
- At the end of the Flash EPROM BIOS replacement procedure, activate the configurator and select the following options in this order: Configure System, Standard Configuration, View or Edit Details, Primary Operating System.
The "Unix, Novell, Windows NT, OS/2, Other" parameter displayed must be set to "Multi-processor" for all operating systems, single and multiprocessor, with the exception of single-processor UNIX operating systems in which case this parameter must be set to "Single-processor". The default setting is "Multi-processor".
- Proceed as follows before installing the UnixWare 2.1 operating system and when a RAID DPT controller is installed:
 - Boot the system from the Orchestra configurator.
 - Configure the controller's "ROM BIOS ADDRESS" at D0000H.
 - Exit from the configuration procedure using the "Save" option.
 - Reboot the system.
 - Check, during the POD, that the onboard Adaptec AIC7870 SCSI controller is configured at address C800H and the DPT controller at address D000H.
 - Install the operating system.

