SNX 140 / 140/R / 160 / 160E / 160/R SYSTEMA (EAGLE)

CHARACTERISTICS

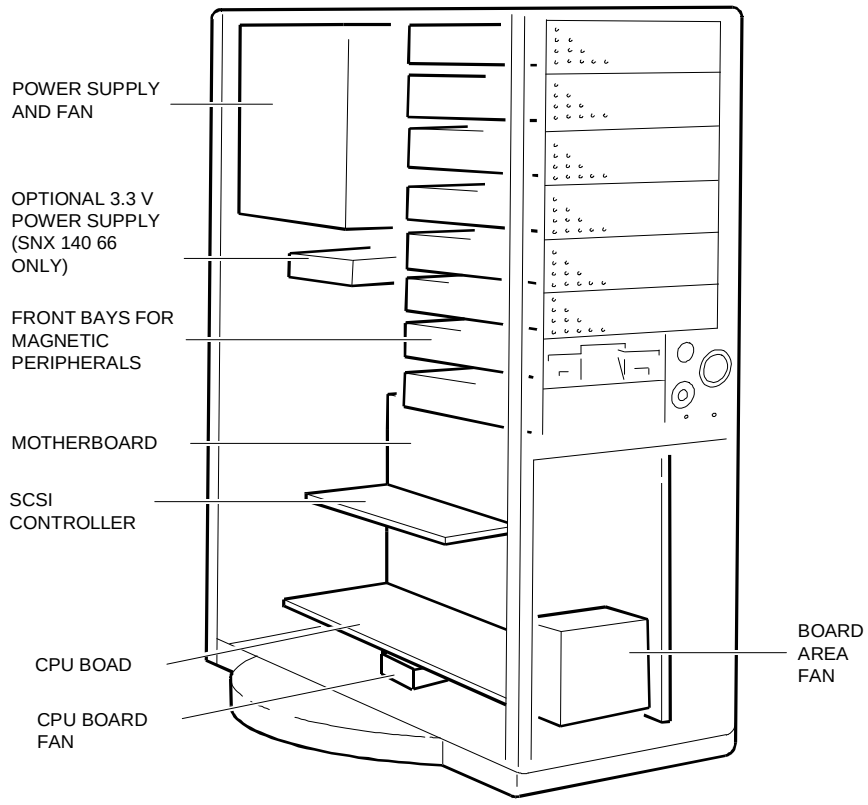
Microprocessor	**SNX 140:** 66 MHz Intel PENTIUM P5 or 75/50 MHz Intel PENTIUM 75 **SNX 140/R:** 66 MHz Intel PENTIUM P5 **SNX 160 / 160/R:** 90/60 MHz Intel PENTIUM 90 **SNX 160E:** 100/60 MHz Intel PENTIUM 100
Dualprocessor (for SNX 160, 160E; 160/R only)	Possibility of adding a second optional Pentium 90 or 100 on the CPU board, in the ZIF socket next to the socket in which the primary processor is installed. In this configuration the system becomes a dualprocessor system.
OverDrive Processor	Possibility of replacing the primary processor, installed in the ZIF socket, with future OverDrive Processors. In this case the system remains a monoprocessor system.
Chipset	**SNX 140 66 / 140/R**: Intel Mercury **SNX 140 75 / 160 / 160E / 160/R**: Intel Neptune
Dual bus architecture	32-bit EISA (Extended Industry Standard Architecture). 32-bit PCI (Peripheral Component Interconnect).
Expansion slots	Nine slots, six of which are free: 4 EISA, 2 PCI, 1 dual EISA/PCI, 1 reserved for the CPU board, 1 EISA or PCI for the SCSI controller.
Cache size	**SNX 140 66 / 140/R:** 16 KB integrated in the processor + 256 KB of No Parity - Asynchronous second level cache in all configurations **SNX 140 75:** 16 KB integrated in the processor + 256 KB of Parity Burst - Asynchronous second level cache in all configurations **SNX 160 / 160E /160/R:** 16 KB integrated in the processor + 512 KB of Parity Burst - Asynchronous second level cache in all configurations
RAM	**SNX 140 66 / 140/R:** 16-192 MB with Parity SIMMs **SNX 140 75 / 160 / 160E / 160/R:** 16-256 MB with Parity SIMMs 32-128 MB with ECC SIMMs
Cabinet	IRON box.
On-board video controller	EGA, CGA and MDA emulation. Standard VGA with the following resolution: 640x480, 16 colors, 60/72 Hz. SVGA with the following resolutions: 640x480, 256 colors 60/72 Hz, 800x600, 16 and 256 colors, 56/60/72 Hz, 1024x768, 16 colors, 60/72/87 Hz.
RESILIENCE version (with the RAID GO2044 SCSI controller only)	SNX 140/R 160/R Systema model whose specific mechanical structure and hard disk redundancy features (RAID-1 and RAID-5) allows faulty hard disks to be replaced without needing to interrupt the system activities underway (hot-swapping) and the consequent automatic reconstruction of the data on the new HDU.
Peripheral Expansion Module PEM 100/R	This optional external module can only host HDUs and increases the system's mass storage capacity. The PEM consists of an IRON-type box and has the same cabinet and mechanical structure as the resilience system version. The hard disks can only be hot-swapped if the PEM is connected to a SCSI RAID controller; if the PEM is connected to other SCSI controllers, the HDUs in the PEM are merely considered as expansions. Up to three PEMs can be connected to a system.
Standard SCSI-2 controller	**SNX 140 66 / 160:** GO622 (EISA), GO624 (PCI), GO2044 (RAID EISA) **SNX 140/R / 160/R:** GO2044 (RAID EISA) **SNX 140 75:** GO2096 (PCI), GO2044 (RAID EISA), GO2061 (RAID PCI) **SNX 160E:** GO624/2096 (PCI), GO2044 (RAID EISA), GO2061 (RAID PCI)

Optional SCSI-2 controller	**SNX 140 66 / 140/R / 160 / 160/R:** GO624 (PCI), GO2044 (RAID EISA) **SNX 140 75:** GO2096 (PCI), GO2044 (RAID EISA), GO2061 (RAID PCI) **SNX 160E:** GO624/2096 (PCI), GO2044 (RAID EISA), GO2061 (RAID PCI)
Uninterruptible Power Supply	External, battery-equipped, UPS models are available which provide constant power supply to the system in the event of line voltage failures. To safeguard the integrity of the data stored on the hard disks in the event of line voltage failures, resilience systems and systems equipped with the SCSI RAID controller must be connected to a UPS.

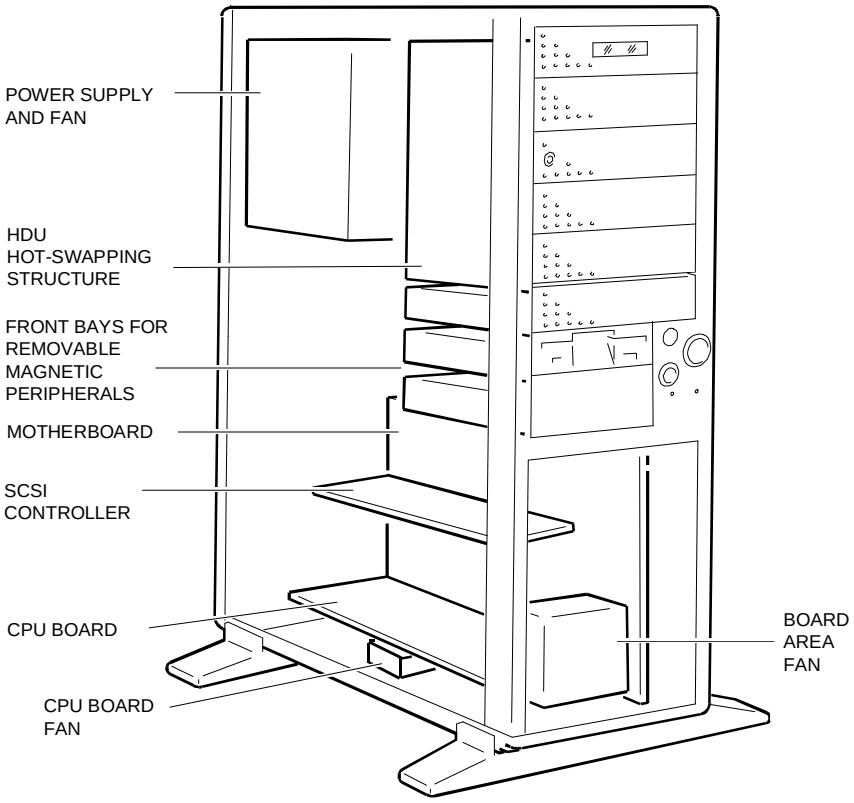
Notes:

- *The commercial name of the SNX 140 Systema remains unchanged for both 66 MHz and 75 MHz versions. For simplicity, and whenever necessary, this manual distinguishes the two versions with SNX 140 66 and SNX 140 75.*
- *Since a basic system cannot be updated into a resilience version, the resilience model can only be ordered directly from the factory. Resilience performance can, however, be obtained by connecting a SCSI RAID controller and external PEM to the basic system version.*
- *Using optional kit UPG APU 160, available until March 95 and which contains a CPU board equipped with a 90/60 MHz Pentium 90 processor, it is possible to convert an SNX 140 66 into an SNX 160 and an SNX 140/R into an SNX 160/R .*
  Using optional kit UPG APU 160/100 which contains a CPU board with a 100/66 MHz Pentium 100 processor, it is possible to convert an SNX 140 75 into an SNX 160E.
- *From April 1995, the SNX 140/R and 160/R systems with an IRON box are no longer available and are replaced by the resilience SNX 160E Systema with Silver box. This new system is called SNX 160/RS Systema.*
- *From April 1995, the SNX 160 is no longer available and is replaced by the SNX 160E.*
  From September 1995, the SNX 140 66 is no longer available and is replaced by the SNX 140 75.
- *The SNX 140 66 MHz /140/R / 160 / 160/R Systema must work at an environmental temperature of less than or equal to 35 ^{O}C since higher temperatures could be critical for the Pentium processor and STU. The maximum temperature for the SNX 140 75 and 160E can reach 40 ^{O}C.*
- *Up to May 15, 1994 the systems have been equipped with a rounded pedestal. From this date onwards the systems have been equipped with new pedestal which prevents the system from overturning. These two types of pedestals were shown in the next figures.*

SNX 140 / 160 / 160E SYSTEMA BASIC MODULE



SNX 140/R / 160/R SYSTEMA BASIC MODULE



UPDATE LEVELS OF THE MAIN COMPONENTS USED ON THE FIRST SERIES SNX 140 SYSTEMA 66 MHz MODELS

MOTHERBOARD	**CPU BOARD**	**BIOS**
BA904 P2.2 Lev. Nasc	GO893 P2.0 Lev. Nasc	Rev. 1.05.1
ARROW SCSI CONTROLLER	**DAGGER SCSI CONTROLLER**	**POWER SUPPLY**
GO622B Lev. Nasc	GO624 Lev. Nasc	SP300T Lev. Nasc
USER DISKETTE	**SYSTEM TEST**	
Rel. 1.04	Rel. 1.03	

UPDATE LEVELS OF THE MAIN COMPONENTS USED ON THE FIRST SERIES SNX 140/R SYSTEMA MODELS

MOTHERBOARD	**CPU BOARD**	**BIOS**
BA904 Lev. 01	GO896 Lev. Nasc	Rev. 1.07
SCSI RAID CONTROLLER	**SCSI DAGGER CONTROLLER**	**POWER SUPPLY**
GO2044 Lev. Nasc FW 6C2	GO624 Lev. Nasc	SP300T-3 Lev. Nasc
USER DISKETTE	**SYSTEM TEST**	
Rel. 1.08	Rel. 1.06	

UPDATE LEVELS OF THE MAIN COMPONENTS USED ON THE FIRST SERIES SNX 140 SYSTEMA 75 MHz MODELS

MOTHERBOARD	**CPU BOARD**	**BIOS**
BA2155 Lev. 02	GO2076 Lev. Nasc	Rev. 2.00
DAGGER SCSI CONTROLLER	**RAID EISA SCSI CONTROLLER**	**RAID PCI SCSI CONTROLLER**
GO2096 Lev. Nasc	GO2044 Lev. 02 FW 6C7	GO2061 Lev. Nasc FW 7E5
POWER SUPPLY	**USER DISKETTE**	**SYSTEM TEST**
SP300T-3 Lev. 01	Config. 1.12, Diagnostic 1.09	Rel. 1.07

UPDATE LEVELS OF THE MAIN COMPONENTS USED ON THE FIRST SERIES SNX 160 SYSTEMA MODELS

MOTHERBOARD	**CPU BOARD**	**BIOS**
BA904 Lev. 01	GO898 Lev. Nasc	Rev. 1.02
ARROW SCSI CONTROLLER	**DAGGER SCSI CONTROLLER**	**POWER SUPPLY**
GO62C Lev. Nasc	GO624 Lev. Nasc	SP300T-3 Lev. Nasc
USER DISKETTE	**SYSTEM TEST**	
Rel 1.06 upd 1	Rel. 1.04	

UPDATE LEVELS OF THE MAIN COMPONENTS USED ON THE FIRST SERIES SNX 160/R SYSTEMA MODELS

MOTHERBOARD BA904 Lev. 01	**CPU BOARD** GO898 Lev. 02	**BIOS** Rev. 1.02
SCSI RAID CONTROLLER GO2044 Lev. Nasc FW 6C2	**DAGGER SCSI CONTROLLER** GO624 Lev. Nasc	**POWER SUPPLY** SP300T-3 Lev. Nasc
USER DISKETTE Rel 1.08	**SYSTEM TEST** Config. 1.06	

UPDATE LEVELS OF THE MAIN COMPONENTS USED ON THE FIRST SERIES SNX 160E MODELS

MOTHERBOARD BA2155 Lev. 02	**CPU BOARD** GO2063 Lev. Nasc	**BIOS** Rev. 1.08
RAID EISA SCSI CONTROLLER GO2044 Lev. 02 FW 6C4	**RAID PCI SCSI CONTROLLER** GO2061 Lev. Nasc FW 6C6	**DAGGER SCSI CONTROLLER** GO624 Lev. Nasc
POWER SUPPLY SP300T-3 Lev. 01	**USER DISKETTE** Config. 1.10, Diagnostic 1.09	**SYSTEM TEST** Rel. 1.07

Note: *All component evolutions are described further on, in the related sections.*

OPERATING SYSTEMS

	Release Tested With Product Availability	Monopro. Certif.	Dualproc. Certif.	Dualproc. Added Software	Notes
DOS Windows WfW	DOS 6.2 Win 3.1 WfW 3.11	Yes	Yes (on one CPU)	O.S. Included	DOS for single-user and single-task environments, Windows for graphics environments. Not for SNX 140/R and 160/R
Windows NT Server	3.1	Yes	Yes	HAL	For network management
Windows NT Server	3.5 (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	Yes	No		For network management
UnixWare	1.1	Yes	No		For multiple-user, multiple-task environments
UnixWare	(2.0.1)	Yes	Yes	O.S. Included	For multiple-user, multiple-task environments
SCO Unix and SCO Open Server	3.2.4.2 3.0.0	Yes	Yes	SCO MPX 3.0 + HAS 3.4 + patch OLI002	For multiple-user and multiple-task environments. The two multiproc. packages are distributed by SCO, the patch by Oliservice
Olivetti Unix SVR4.0	V2.4 (V2.4.1)	Yes	Yes	O.S. Included	For multiple-user, multiple-task environments
IBM OS/2	2.1 (2.11)	Yes	No		For single-user, multiple-task environments
IBM OS/2	(3.0 WARP)	Yes	No		For single-user, multiple-task environments
Banyan Vines	5.53	Yes	Yes	O.S. Included	SNX 140/R and 160/R only

Note: *- Indicated in parenthesis are the releases tested at the launch of the SNX 160E and 140 75.*
- The dualprocessor version is only available for the SNX 160 / 160E /160/R.

MONITORS

MODEL	DESCRIPTION	SUPPLIER	PDG NAME
MDU 1441	14", VGA, flat-screen, monochrome monitor (for N. America, Canada and N. Europe, 110 V). Label: DSM 25-314/P-Y	Philips	DSM 25-314/P-Y
MDU 1441/LE	14", VGA, low emission, positive monochrome monitor. Label: MDU 1441E/PH01	Philips	DSM 26-314/LE
CDU 1435S	14", VGA, high resolution color monitor, 0.28 dp. Label: CDU 1435S/HA82.	Hantarex Goldstar	DSM 27-140/LE
CDU 1448G	14", VGA, multifrequency, low emission, high resolution, 0.28 dp, power saving color monitor. Label: CDU 1448G/HA01	Hantarex	DSM 27-141/PS
CDU 1438/GN	14", VGA, 0.28 dp. high resolution color monitor.	Goldstar	DSM 28-142 PS
CDU 1448/TS	14" Trimode VGA, 60Hz, 800x600 72 Hz, 1024x768 60 Hz non interlaced, 0.28 dp, color monitor.	Philips	DSM 27-414/TM
CDU 1448G	14", VGA, multifrequency, low emission, high resolution, 0.28 dp, power saving color monitor. Label: CDU 1448G/PH	Philips	DSM 28-143/PS
CDU 1460MS	14", VGA, high resolution, multifrequency, ergonomic color monitor. Label: CDU 1460MS/HY01	Hyundai	DSM 28-144/MS
CDU 1458MS	14", VGA, high resolution, multifrequency, low emission, 72 Hz color monitor. Label: CDU 1458MS/HA71	Hantarex	DSM 27-514/MS
CDU 1438/SE	14", VGA, high resolution, 0.39 dp color monitor.	Lite-On	DSM 28-039
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

Note: *Basic system models can be equipped with a remote terminal instead of a monitor and keyboard. This feature is controlled by the BIOS and activated by the User Disk. The remote terminal feature is not available on resilience systems or on any system equipped with a SCSI RAID controller. Appendix G gives information on this feature.*

MAGNETIC PERIPHERALS

MODEL	TYPE	INT.	CAP.	SIZE	PDG NAME
Y-E Data YD-702B-6037B Y-E Data YD-702D-6037D Sony MPF420-1 Sony MPF520-3 Mitsumi D359T3 Mitsumi D359T5 Epson SMD 1340 P-031	MFD	SA450	1.44 MB	3.5"	Under BU
Panasonic JU475-5 C08 Panasonic JU475-5 A08W	MFD	SA450	1.2 MB	5.25" HH	MFD 40-120
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 (small panel)	STU	SCSI	1/1.2 GB	5.25" HH	STS 1G-95/R
Hewlett Packard HP 35470A	DAT	SCSI	1.3/2 GB	3.5"	DAT 1300
Hewlett Packard HP 35480A	DAT	SCSI	2/8 GB	3.5"	DAT 4000
Hewlett Packard HP C1536A	DAT	SCSI	2/8 GB	3.5"	DAT 4000/S
Hewlett Packard HP C1533A	DAT	SCSI	4/16 GB	3.5"	DAT DDS24G
Sony CDU 561-51 (2X)	CD-ROM	SCSI	650 MB	5.25" HH	CDR 40-561
Panasonic CR-503-B (2X)	CD-ROM	SCSI	650 MB	5.25" HH	CDR TRAY 503
Sony CDU76S (4X)	CD-ROM	SCSI	650 MB	5.25" HH	CDR 4S-500
Quantum LPS270S	HDU	SCSI	270 MB	3.5" x 1"	HDS 270-12 (basic sys. only)
Conner CP30540 Seagate ST3620N Quantum EMPIRE 540	HDU	SCSI	525 MB	3.5" x 1"	HDS 525-9 (basic sys. only)
Seagate ST31200N Digital DSP3107L	HDU	SCSI	1.05 GB	3.5" x 1"	HDS 1050-9 (basic sys. only)
IBM DPES-31080 Seagate ST31230N Seagate ST51080	HDU	SCSI	1.05 GB	3.5" x 1"	HDS 1050-9A (basic sys. only)
Seagate ST12400N	HDU	SCSI	2.1 GB	3.5"x1,6"	HDS 2100-10 (basic sys. only)
Seagate ST32430N	HDU	SCSI	2.1 GB	3.5"x1"	HDS 2100-9 (basic sys. only)
Seagate ST15230N	HDU	SCSI	4.2 GB	3.5"x1.6"	HDS 4200-10 (basic sys. only)
Seagate ST3620NC (SCA conn.)	HDU	SCSI	525 MB	3.5" x 1"	HDR 525 (resilience sys. and PEMs only)
Seagate ST31200NC (SCA conn.) Seagate ST31230WC (SCA conn.)	HDU	SCSI	1.05 GB	3.5" x 1"	HDR 1G (resilience sys. and PEMs only)
Seagate ST32430WC (SCA conn.) Seagate ST32151WC (SCA conn.) IBM DCAS-32160 (SCA conn.)	HDU	SCSI	2.1 GB	3.5" x 1"	HDR 2G (resilience sys. and PEMs only)

Notes:

- *The HDUs listed in the PdG as HDS can only be installed in the basic systems, while the HDUs listed as HDR can be installed in resilience models and in PEMs. These latter HDUs are fitted on an appropriate installation support and are equipped with an 80-pin SCA (Single Connector Attachment) interface connector so that they can be directly attached to the SCSI back plane.*
- *The HDUs are all powered at system power on. To limit the absorptions, the delay with which the individual drive motors are enabled is determined by the BIOS and controlled by a SCSI command provided by the SCSI controller. For this to be possible the HDUs installed after the first two hard disks must have their Start Motor Option set to Enabled, by means of the appropriate jumper, so that the drive motor only starts upon reception of a SCSI command.*

ELECTRONIC BOARDS

BOARD NAME	DESCRIPTION	BUS	PDG NAME
BA904/2155	Motherboard with nine expansion slots, Super VGA video controller, floppy disk controller, two serial ports, parallel port, keyboard and mouse management.	-	Under BU
GO893/896/2052	Monoprocessor CPU board for the SNX 140 Systema 66 MHz / 140/R Systema with a 66 MHz Pentium P5 processor, six sockets for system memory parity SIMMs (16 MB minimum), 256 KB flash EPROM, 256 KB of No parity - Asynchronous second level cache.	Dedi-cated	Under BU
GO2076	Monoprocessor CPU board for the SNX 140 Systema 75 MHz with a 75/50 MHz Pentium 75 processor, eight sockets for system memory Parity or ECC SIMMs (minimum 16 MB parity, 32 MB ECC), 256 KB flash EPROM, 256 KB of Parity - Burst second level cache.	Dedi-cated	Under BU
GO898/2060/2082	Dual-processor CPU board for the SNX 160 / 160/R Systema, with a 90/60 MHz Pentium 90 processor installed in a ZIF socket, a second ZIF socket for the installation of a second optional Pentium 90 processor, eight sockets to host parity or ECC SIMMs (min. 16 MB parity, 32 MB ECC), 256 KB of Flash EPROM, 512 KB of second level parity-burst cache.	Dedi-cated	Under BU
	Second optional Pentium 90 processor.	-	APU SNX160
GO2063/2079-100	Dual-processor CPU board for the SNX 160E Systema with a 100/66 MHz Pentium 100 processor installed in a ZIF socket, a second ZIF socket for the installation of a second optional Pentium 100 processor, eight sockets to host parity or ECC SIMMs (min. 16 MB parity, 32 MB ECC), 256 KB of Flash EPROM, 512 KB of second level parity-burst cache	Dedi-cated	Under BU
	Second optional Pentium 100 processor.	-	APU SNX160/100
GO622/2051 (Arrow)	Dual-channel SCSI-2 Single-Ended SCSI controller with a 33 MB/sec transfer rate (for the SNX 140 66 only).	EISA	Under BU
GO624/2096 (Dagger)	Single-channel SCSI-2 Single-Ended SCSI controller with a 133 MB/sec transfer rate. The GO2096 is only available for the SNX 140 75 and 160E; only the GO2096 can be used on the SNX 140 75.	PCI	Under BU or SCC PCI 101
GO2044 (RAID DPT)	Single-channel SCSI-2 Single-Ended SCSI controller with RAID-0, 1, 5 arrays for hot-swapping performance. The controller has four cache memory sockets; one socket with 4 MB is always present.	EISA	Under BU or HDCR 1E015

BOARD NAME	DESCRIPTION	BUS	PDG NAME
GO2061 (RAID DPT)	For the SNX 140 75 and 160E only. Mono/tri-channel SCSI-2 Single-Ended SCSI controller with RAID-0, 1, 5 arrays for hot-swapping performance. The second and third channels are optional, and are provided by the installation of a board in the two reserved connectors on the controller. This controller also contains four cache memory sockets; one socket always has 4 MB installed.	PCI	Under BU or DCR PCI1/3
MEM 2027	One 4 MB SIMM with ECC for cache expansion on the GO2044 or GO2061 controller. Maximum expansion is obtained using three kits, for a total of 16 MB. Only 4 MB and 16 MB configurations are allowed.	-	RACME 04
IF2020	For the SNX 140 75 and 160E only. Piggy back board for the second SCSI channel (external only), on the GO2061, internal SCSI cable for connection between the board and the SCSI connector flush with the case, EPROM firmware.	-	EXP 2NDSCSI
IF2021	For the SNX 140 75 and 160E only. Piggy back board for the second and third SCSI channel (external only), on the GO2061, two internal SCSI cables for connection between the board and the SCSI connectors flush with the case, EPROM firmware.	-	EXP 2&3SCSI
IF556	SCSI backplane for connecting the HDU to the SCSI controller and power supply (for resilience systems and PEMs only).	-	Under BU and PEM
IF557	Swap Board for the resilience console LED interface (for resilience systems and PEMs only).	-	Under BU and PEM
GO576 (Intelliport AT8)	Multiport board with 8 RS232C channels + 8-way distribution box DI017 and cable. (Not available for the SNX 140 75 MHz)	AT	MUX 1708
GO577 (Intelliport AT16)	Multiport board with 16 RS232C channels + 16-way distribution box DI018 and cable. (Not available for the SNX 140 75 MHz)	AT	MUX 1716
GO584 (ALC)	Multiport board with 48 RS232C channels. (Not available for the SNX 140 75 MHz)	EISA	MUX 1717
DI020 (A.F.M.)	16-way RS232C distribution box for ALC (max. 3). (Not available for the SNX 140 75 MHz)	-	DBOX 1718
GO2057 (Stallion)	Multiport board with 32 RS232D channels. The kit also contains the DBOX connection cable.	EISA	C-MUX8-32E
BOX 800	8-way RS232D distribution box for Stallion (max 4).	-	DBOX 800
BOX 1600	16-way RS232D distribution box for Stallion (Max 2).	-	DBOX 1600
SIC 2832	Multiport board with 4 RS232D channels + cable. (Not available for the SNX 140 75 and 160E)	AT	SIC 2832
SIC 2635	RS232C/C.L. board. (Not available for the SNX 140 75 and 160E)	AT	SIC 2635
GO530C+IF412C	Ethernet/Cheapernet LAN controller.	AT	NCU 9141-II
GO527+IF412	Ethernet/Cheapernet intelligent LAN controller.	AT	NPU 9145
GO539+IF412C	Ethernet/Cheapernet LAN controller.	EISA	NCU 9180
GO530C+IF411/S	Ethernet 10BT LAN controller.	AT	NCU 9143/S
GO539+IF411/S	Ethernet 10BT LAN controller.	EISA	NCU 9181/S
	Ethernet 10BT intelligent LAN controller.	AT	NPU 9147/S
(Supplier Olicom)	Ethernet/Cheapernet LAN controller (ex NCU 9141-II).	AT	OC 2121/II
(SupplierOlicom)	Ethernet 10BT LAN controller (ex NCU 9143/S).	AT	OC 2122/II
(Supplier Olicom)	Ethernet 10B2, 10B5, 10BT LAN controller.	AT	OC 2123/II

BOARD NAME	DESCRIPTION	BUS	PDG NAME
(Supplier Olicom)	Ethernet 10B5, 10BT LAN controller.	AT	OC 2125/II
(Supplier Olicom)	Token Ring 16/4 Mbps LAN controller (ex NCU 9172).	AT	OC 3117
(Supplier Olicom)	Token Ring LAN controller.	EISA	OC 3135
(Supplier Z'NYX)	Ethernet 10B2, 10BT LAN controller.	PCI	ZX312
(Supplier 3Com)	Ethernet 10B2, 10B5 LAN controller.	EISA	3C579
(Supplier 3Com)	Ethernet 10B5, 10BT LAN controller.	EISA	3C579-TP
GO573A+IF479	2V24 intelligent WAN controller.	AT	LPU 2400
GO573A+IF482	X21 intelligent WAN controller.	AT	LPU 2100
GO573	V24 intelligent WAN controller.	AT	LPU 24
GO573A+IF480	V35 intelligent WAN controller.	AT	LPU 3500
GO573A+IF481	V36 intelligent WAN controller.	AT	LPU 3600

POWER SUPPLIES AND UPS

POWER SUPPLY	OUTPUT VOLT.	TOLERANCE	MAX. CURR.	TOT. POW.	INPUT VOLT.	FREQ.	CABINET
SP300T	+5.1 V +12 V -12 V -5 V	+5% -4% +5% -4% +10% -10% +5% -5%	32 A 10 A 1 A 1 A	300 W	100-120 Vac 200-240 Vac	50/60 Hz	Base
DC3/15 (PSM-DC 3.3)	3.3 V	+5% -4%	15 A	50 W	+5 Vdc, +12 Vdc	-	Base
SP300T-3	+5.1 V +12 V -12 V -5 V +3.3 V	+5% -4% +5% -4% +10% -10% +5% -5% +5% -4%	32 A 10 A 1 A 1 A 15 A	300 W	100-120 Vac 200-240 Vac	50/60 Hz	Base and PEM

Note: *The first series SNX 140 Systema 66 MHz models come with the SP300T power supply capable of supplying the maximum system configuration. A secondary DC3/15 power supply can be used as an alternative to the SP300T to only supply the 3.3 V required by the PCI bus.*
The installation of the secondary power supply is only required when PCI boards requiring 3.3 V are installed in the system.
The recent SNX 140 66 models, the SNX 140/R, SNX 140 75, SNX 160, SNX 160/R, SNX 160E and the PEMs come with a single SP300T-3 power supply which can also provide the 3.3 V.
The first series SNX 140 66 MHz models equipped with the SP300T power supply and which are to be converted into SNX 160 Systema models by means of kit UPG APU 160 require the optional PSM-DC 3.3 power supply which provides 3.3 V to the Pentium 90 processor.

UPS	TOT. POW.	VER.	INPUT VOLTAGE	OUTPUT VOLTAGE	CAB.
APC - SMART UPS 900 VA	630 W	100/120 Vac	100/120 Vac 50/60 Hz	100/115 Vac 50/60 Hz	External
APC - SMART UPS 1250 VA	900 W				
APC - SMART UPS 2000 VA	1500 W				
APC - SMART UPS 1000 VA (*)	670 W	220/240 Vac	220/240 Vac 50/60 Hz	225/240 Vac 50/60 Hz	
APC - SMART UPS 1400 VA (*)	950 W				
APC - SMART UPS 2200 VA (*)	1600 W				
APC - SMART UPS 3000 VA (*)	2250 W				

(*) = New APC models that replace the previous versions.

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 mode. 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. In addition, it is also runs a number of personalized operations and functions.*

Note: *Besides having different power ratings, the main differences between the older and newer models are the following:*
- On the newer models, possibility of installing a LAN board in an appropriate slot so that the UPS can be connected in a network.
- On the newer models, possibility for the operator to replace the batteries without needing to remove power supply from the load.

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 a PEM.*

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	
DRS Code 550180E	-	Max. 7.62 m (25 ft) long extension cable for ALC to AFM connections	7.62	RJ45 - RJ45 8 M - 8 M
DRS Code 550181T	-	7.62 to 304.8 m (25 to 1,000 ft) long extension cable for ALC to AFM connections	-	RJ45 - RJ45 8 M - 8 F
DRS Code 550182U	-	7.62 to 762 m (25 to 2,500 ft) long extension cable for ALC to AFM connections	-	RJ45 - RJ45 8 M - 8 F

INTERRUPT LEVELS

NAME	STATUS	FUNCTION	NOTES
NMI		Fatal errors: 2-bit RAM error, bus timeout, etc.	Parity error, channel control, bus master timeout, debugging port
IRQ0	Reserved	System timer	Internal timer used by the BIOS
IRQ1	Reserved	Keyboard	
IRQ2	Free		Used in alternative to IRQ9
IRQ3		COM2	
IRQ4		COM1	
IRQ5		SCSI controller	Free or SCSI controller
IRQ6		Floppy disk controller	
IRQ7		LPT1	
IRQ8	Reserved	Real Time Clock	
IRQ9	Free		Used in alternative to IRQ2. IRQ9 is preferably used on ISA LAN boards.
IRQ10	Free		This is the only level used by the ALC board. If this board is not present, IRQ10 can be used for other ISA AT8/16 or Stallion boards.
IRQ11		SCSI controller	
IRQ12		PS/2-compatible mouse	
IRQ13	Reserved	Numeric coprocessors	
IRQ14	Free		
IRQ15	Free		

Note: *IRQs 2 and 9 belong to the same line and must therefore be used in alternative to each other.*

SYSTEM MEMORY MAP

ADDRESS	FUNCTION	CACHE
0 - 512 KB	Basic RAM	YES
512 - 640 KB	Dual port memory on multiport AT8/16 boards - basic RAM	NO - YES
640 - 768 KB	Video ROM shadow	NO
768 - 800 KB	Video ROM shadow	NO
800 - 896 KB	ROM or dual port memory for EISA/ISA boards	NO
896 KB - 1 MB	ROM BIOS or system ROM BIOS shadow	YES
1 - 15 MB	RAM. Maximum address limit for ISA I/O and DMA bus master	YES
15 MB - 16 MB	Dual port memory for EISA/ISA boards - basic RAM	NO - YES
16 MB - 256 MB	RAM	YES
256 MB - 4 GB-128 MB		YES
4 GB-128 KB - 4 GB	ROM BIOS (optional shadow)	YES

I/O ADDRESS MAP

ADDRESS	DESCRIPTION	PHYSICAL LOCATION
0000h - 000Fh	DMA controller (0-3)	ESC
0010h - 001Fh	Reserved	
0020h - 0021h	Programmable interrupt controller 1	ESC
0022h	ESC Configuration Address Index register	ESC
0023h	ESC Configuration Data Index register	ESC
0024h - 003Fh	Reserved	Alias ESC
0040h - 0043h	Timer 1	ESC
0044h - 0047h	Reserved	
0048h - 004Bh	Timer 2	ESC
004Ch - 005Fh	Reserved	
0060h	Keyboard controller	8742
0061h	Control and NMI status register	ESC
0062h - 0063h	Reserved	
0064h	Keyboard controller	8742
0065h - 006Fh	Reserved	
0070h	NMI Mask register/RTC address register	ESC/RTC
0071h	RTC data register	RTC
0072h - 007Fh	Reserved	
0080h - 008Fh	DMA page register	ESC
0090h - 0091h	Reserved	
0092h	System Control Port register	ESC
0093h - 009Fh	Reserved	
00A0h - 00A1h	Programmable interrupt controller 2	ESC
00A2h - 00BFh	Reserved	Alias
00C0h - 00DFh	DMA controller 2	ESC
00E0h - 00EFh	Reserved	
00F0h	IRQ13 reset register	ESC
00F1h - 0101h	Reserved	
0102h	SVGA enable register	GD5422
0103h - 01EFh	Free	
01F0h - 01F7h	Hard disk drive	EISA Bus
01F8h - 0277h	Free	
0278h - 027Ah	Parallel port 3 (LPT3)	FDC37C665
027Bh - 02F7h	Free	
02F8h - 02FFh	Serial port 2	FDC37C665
0300h - 0371h	Free	
0372h	Secondary Floppy Disk Digital Output register	ESC
0373h - 0377h	Free	
0378h - 037Bh	Parallel port 1 (LPT1)	FDC37C665
037Ch - 03AFh	Free	
03B0h - 03BBh	Video controller	GD5422

ADDRESS	DESCRIPTION	PHYSICAL LOCATION
03BCh - 03BEh	Parallel port 2 (LPT2)	FDC37C665
03BFh	Free	
03C0h - 03CFh	Video controller	GD5422
03D0h - 03D3h	Free	
03D4h - 03DCh	Video controller	GD5422
03DEh - 03EFh	Free	
03F0h	Configuration address index register	FDC37C665
03F1h	Configuration data index register	FDC37C665
03F2h	Primary floppy disk digital output register	ESC/FDC37C665
03F3h - 03F7h	Floppy disk controller	FDC37C665
03F8h - 03FFh	Serial port 1	FDC37C665
0400h - 040Fh	DMA controller 1	ESC
0410h - 043Fh	DMA Scatter-Gather register	ESC
0440h - 0460h	Free	
0461h	Extended NMI and reset control registers	ESC
0462h	NMI I/O interrupt port control register	ESC
0463h	Free	
0464h	Last EISA bus master granted register	ESC
0465h - 047Fh	Free	
0480h - 048Fh	DMA 1 chan. 0-7 High Page control registers	ESC
0490h - 04C1h	Free	
04C2h	Reserved	
04C3h - 04C5h	Free	
04C6h	DMA chan. 5 High CCR control register	ESC
04C7h - 04C9h	Free	
04CAh	DMA chan. 6 High CCR control register	ESC
04CBh - 04CDh	Free	
04CEh	DMA chan. 7 High CCR control register	ESC
04CFh	Free	
04D0h - 04D1h	Interrupt Edge/Level control registers	ESC
04D2h - 04D3h	Reserved	
04D4h - 04FFh	DMA extended registers	ESC
0500h - 07FFh	Free	
0800h - 08FFh	EISA Configuration RAM	
0900h - 0BFFh	Free	
0C00h	Configuration RAM page register	ESC
0C01h - 0C03h	Free	
0C04h - 0C06h	Motherboard configuration register	Motherboard (PAL)
0C07h - 0C7Fh	Free	
0C80h - 0C83h	Motherboard EISA ID register	
0C84h - 0CF7h	Free	
0CF8h - 0CFCh	PCMC configuration registers	PCMC
0CFDh - 46E7h	Free	

ADDRESS	DESCRIPTION	PHYSICAL LOCATION
46E8h	SVGA control register	GD5422
46E9h - BFFFh	Free	
C000h - C0FFh	PCMC configuration registers	PCMC
C100h - C4FFh	Configuration area for PCI boards	PCI
C500h - C5FFh	PCEB configuration registers	PCEB
C600h - CFFFh	Configuration area or PCI boards	PCI

DMA CHANNELS

DMA	FUNCTION	DMA	FUNCTION
0	Free	4	Reserved
1	Free or parallel port if the extended mode (ZIPPY) is enabled	5	Free
2	FDU transfers	6	Free
3	Free	7	Free

POWER ON DIAGNOSTIC MESSAGES

ERROR MESSAGE	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 presists after a reset. Replace the CPU board and rewrite the BIOS flash EPROM.
MEMORY TEST ERROR MESSAGES	
Memory SIMM Mismatch Error in bank(s): xx	System DRAM memory incorrectly inserted into its sockets, or the SIMM sizes are different within the same bank. If necessary, replace the SIMM, activate the diagnostic, otherwise replace the CPU board.
Memory SIMM Read/Write Error	128 KB base memory bank read/write test failed. Replace the SIMM modules, then the CPU board.
Base Memory Configuration Error	The configured base-memory size is different from the actual size. Activate the ROM Setup utility, the error condition will be corrected automatically.
Extended Memory Configuration Error	The configured extended memory size is different from the actual extended memory. Activate the ROM Setup utility, the error condition will be corrected automatically.
Total Memory Configuration error	The total memory size configured is different from the actual total-memory size. Activate the ROM Setup utility, the error condition will be corrected automatically.
Memory Size Miscompare Error	The configured base or extended memory size was different from the actual size found. Activate the ROM Setup utility, the error condition will be corrected automatically.
Address Line Error at Addr: xxxxxxxxh Wrote: xxxxxxxxh Read: xxxxxxxxh	System board DRAM memory-address lines open or shorted. Run the diagnostic, replace the CPU board.
Dword Access Error at Addr: xxxxxxxxh Wrote: xxxxxxxxh Read: xxxxxxxxh	DRAM word enable control lines are open or shorted. Run the diagnostic, replace the CPU board.
Read/Write Error at Addr: xxxxxxxxh Wrote: xxxxxxxxh Read: xxxxxxxxh	DRAM read/write error or EEPROM configuration error. Check the configuration, run the diagnostic, replace the SIMM memory modules, then the CPU board.
System Parity Error at Addr: xxxxxxxxh Wrote: xxxxxxxxh Read: xxxxxxxxh	Parity error in system memory. Check that the SIMM modules are inserted correctly on the CPU board, run the diagnostic, replace the SIMM modules, then the CPU board.
Adapter Parity error in Slot: xx	EISA/ISA board parity error in slot x. Activate the ECU, replace the board, then the motherboard.
Unable To Clear Parity/IOCC Error	Parity error during I/O access (depends on previous error). Run the diagnostic, replace the motherboard.
Unable to Enter Protected Mode	Run the diagnostic, replace the CPU board.
FATAL ERROR, System Halted	Check base memory configuration, activate the ECU.
Remapped Split Memory Config Error Address: Length:	Activate the ECU.
EISA/PCI CONFIGURATION ERROR MESSAGES	
ACFG (Auto Config) Error	Internal self-configuration error. Insufficient system memory or incorrect buffer allocation. Activate the ECU to solve the configuration conflict manually.
Invalid Slot Init Error in slot(s): xx	POD has detected a configuration error in the EEPROM relevant to the board installed in slot x. Activate the ECU.

ERROR MESSAGE	DESCRIPTION
ID Timeout Error in slot(s): xx	Timeout while reading the EISA ID from the board in slot x. Check the board insertion in the slot, replace the board, then the motherboard.
ID Configuration Error in slot(s): xx	The EEPROM EISA ID for slot x does not match the physical EISA ID. Either a new EISA board has been installed in the slot or an existing board has been removed, check by activating the ECU.
Incomplete Configuration Error in slot(s): xx	The EEPROM configuration for the board in slot x is not complete. Activate the ECU.
Invalid Configuration Error in slot(s): xx	EEPROM configuration error concerning the board installed in slot x. Activate the ECU.
Invalid Memory Configuration Error in slot(s): xx	EEPROM configuration error concerning the board installed in slot x. Activate the ECU.
Invalid IRQ Configuration Error in slot(s): xx	IRQ configuration error in the EEPROM for the board installed in slot x. Activate the ECU.
Invalid DMA Configuration Error in slot(s): xx	DMA configuration error in the EEPROM for the board installed in slot x. Activate the ECU.
Invalid Port Configuration Error in slot(s): xx	I/O port configuration error in the EEPROM forn the board installed in slot x. Activate the ECU.
RAM/ROM Attribute Conflict Error in slot(s): xx	The memory attribute for the board installed in slot x conflicts with the allowable attribute for the memory range. Activate the ECU.
PCI Configuration Error	Error during configuration. Insufficient system memory, or buffer allocation error. Activate the ECU to solve the configuration conflict manually.
Video RAM Attribute Error in slot(s): xx	Video RAM is incorrectly declared in slot x as read-only memory or as cacheable memory (video RAM is read/write and cannot be cached). Activate the ECU.
C000: Seg RAM/ROM Attrib Conflict Error in slot(s): xx	The C000: range is declared as RAM in slot x but the user has configured the C000: range to be shadowed (as ROM). Activate the ECU.
C800: Seg RAM/ROM Attrib Conflict Error in slot(s): xx	The C800: range is declared as RAM in slot x but the user has configured the C800: range to be shadowed (as ROM). Activate the ECU.
D000: Seg RAM/ROM Attrib Conflict Error in slot(s): xx	The D000: range has been declared as RAM in slot x but the user has configured the D000: range to be shadowed (as ROM). Activate the ECU.
D800: Seg RAM/ROM Attrib Conflict Error in slot(s): xx	The D800: range is declared as RAM in slot x but the user has configured the D800: range to be shadowed (as ROM). Activate the ECU.
System Board Configuration Error	Motherboard configuration error. Activate the ECU.
KEYBOARD/MOUSE ERROR MESSAGES	
Keyboard Clock/Data Line Error	Keyboard control signals are open or shorted. Run the diagnostic, check the keyboard connection, then the motherboard.
Keyboard Controller Error	Keyboard controller error. Run the diagnostic, replace the motherboard.
Keyboard Interrupt Error	Keyboard controller interrupt test error. Run the diagnostic, replace the motherboard.
Keyboard Selftest Error	Keyboard selftest failed. Run the diagnostic, replace the keyboard or the motherboard.
Keyboard Stuck Key Code: xxh Error	Keyboard stuck key detected; the stuck key 's scan-code value is displayed in hex format. Run the diagnostic, replace the keyboard or the motherboard.
Keyboard/Pointing Device Fuse Error	Defective keyboard/mouse fuse. Replace it.
Keyboard Controller Communication Error	Keyboard controller did not respond to commands sent. Run the diagnostic, check the keyboard connection, replace the cable, the keyboard, then the motherboard.
Keyboard Controller Selftest Error	Keyboard controller automatic test failed. Run the diagnostic, replace the motherboard.

ERROR MESSAGE	DESCRIPTION
Pointing Device Error	Error during mouse test. Run the diagnostic, replace the mouse, then the motherboard.
COPROCESSOR ERROR MESSAGES	
CPU Math Coprocessor Presence Error	Math coprocessor not detected (it should always be present with the processor). Run the diagnostic, replace the CPU board.
CPU Math Coprocessor Stack Error	Processor internal error. Run the diagnostic, replace the CPU board.
CPU Math Coprocessor Trig Error	Processor internal error. Run the diagnostic, replace the CPU board.
CPU Math Coprocessor Logarithm Error	Processor internal error. Run the diagnostic, replace the CPU board.
CPU Math Coprocessor Exception Erro	Processor internal error. Run the diagnostic, replace the CPU board.
CPU Math Coprocessor Interrupt Error	Processor internal error. Run the diagnostic, replace the CPU board.
CPU Math Coprocessor Config Error	Coprocessor configured as present, but the presence has not been detected or coprocessor configured as not present, but the presence has been detected. Run the ROM Setup utility, then replace the CPU board.
CACHE MEMORY TEST ERROR MESSAGES	
CPU Internal Cache Addr Line Error	Processor internal cache error. Run the diagnostic, replace the CPU board.
CPU Internal Cache Flush Error	Processor internal cache error. Run the diagnostic, replace the CPU board.
CPU Internal Cache INVD Error	Processor internal cache error. Run the diagnostic, replace the CPU board.
CPU Internal Cache WBINVD Error	Processor internal cache error. Run the diagnostic, replace the CPU board.
CPU Internal Cache Read/Write Error	Processor internal cache error. Run the diagnostic, replace the CPU board.
CPU Internal Cache End Bits Error	Processor internal cache error. Run the diagnostic, replace the CPU board.
CPU Internal Cache Consistency Error	Processor internal cache error. Run the diagnostic, replace the CPU board.
CPU Internal Cache Disabled	Displayed together with one of the previous error messages when there is no secondary cache. Run diagnostic, replace the CPU board.
CPU Internal/Optional Caches Disabled	Displayed together with one of the previous error messages there is a secondary cache. Run the diagnostic, replace the CPU board.
Optional Cache Addr Line Error	Secondary cache error. Run the diagnostic, replace the secondary cache, then the CPU board.
Optional Cache Read/Write Error	Secondary cache error. Run diagnostic, replace the secondary cache, then the CPU board.
Optional Cache Replacement Error	Secondary cache error. Run diagnostic, replace the secondary cache, then the CPU board.
Optional Cache Gate A20 Line Error	Secondary cache error. Run the diagnostic, replace the secondary cache, then the CPU board.
Optional Cache Cacheability Error	Secondary cache error. Run diagnostic, replace the secondary cache, then the CPU board.
Optional Cache Shadow RAM Caching	The secondary cache is declared as RAM shadow, therefore only read, to be enabled also for write. Set the parameter correctly with the ROM Setup utility.
Optional Cache Disabled	Displayed together with the six previous error messages. The processor primary cache is still working. Run the diagnostic, replace the secondary cache, then the CPU board.

ERROR MESSAGE	DESCRIPTION
DMA REGISTER ERROR MESSAGES	
DMA Address Register Error	DMA controller error. Run the diagnostic, replace the motherboard.
DMA Count Register Error	DMA controller error. Run the diagnostic, replace the motherboard.
DMA Mask Register Error	DMA controller error. Run the diagnostic, replace the motherboard.
DMA Page Register Error	DMA controller error. Run the diagnostic, replace the motherboard.
DMA Stop Register Error	DMA controller error. Run the diagnostic, replace the motherboard.
REMOTE TERMINAL, SERIAL PORT, PARALLEL PORT ERROR MESSAGES	
Remote Terminal Configuration Error	Type of terminal selected or COM port is not valid, or selected COM port is disabled or not available, or no terminal is connected to the COM port. Run the Configuration Utility
Remote Terminal Hardware	Error, Selected COM port not working. Replace the motherboard.
Remote Terminal Installation Error	Remote terminal feature requested but there is no I/O device (video/keyboard, remote terminal via COM2 or remote terminal via COM1) available. Run the Configuration Utility.
Serial COMx Address Conflict Error	Address conflict between the motherboard serial port and the COMx serial port of the ISA expansion board. Activate the ECU.
Serial COMx Reg Read/Write Test Error	Hardware error on COMx serial port. Run the diagnostic, replace the motherboard.
Serial COMx MODEM Loopback Test Error	Hardware error on COMx serial port. Run the diagnostic, replace the motherboard.
Serial COMx FIFO Buffer Test Error	Hardware error on COMx serial port. Run the diagnostic, replace the motherboard.
Serial COMx Interrupt Test Error	Hardware error on COMx serial port. Run the diagnostic, replace the motherboard.
Serial COMx IRQ Config Error	IRQ configuration error on COMx serial port. Run Setup utility.
Serial Port Error	Serial port configured for remote terminal has failed the test. Run diagnostic, replace the motherboard.
Parallel Port Address Conflict Error	I/O addresses conflict between motherboard parallel port and another installed on ISA board. Activate the ECU.
Parallel Port Compatible Mode Error	Hardware error on parallel port. Run the diagnostic, replace the motherboard.
Parallel Port Extended Mode Error	Hardware error on parallel port. Run the diagnostic, replace the motherboard.
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 ROM Setup utility, check FDU signals and power cables.
Floppy Disk CMOS 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 ROM Setup utility.
Floppy Disk Controller Config Error	The floppy controller is not configured correctly. Run ROM Setup utility.
Floppy Disk Port 3F3h Read/Write Error	POD cannot read/write correctly on floppy disk port 3F3h. Run ROM Setup utility, then replace the motherboard.
Floppy Disk Port 3F3h Media Sensing Error	Port 3F3h, containing information concerning the type of floppy disk and support, failed a compatibility test. Run ROM Setup utility, then replace the motherboard.

ERROR MESSAGE	DESCRIPTION
EISA GO622 SCSI CONTROLLER ERROR MESSAGES	
AIC-77XX SCSI Error #	Error during system SCSI controller initialization. Replace SCSI controller, then the motherboard.
HDU Device Access Table Build Error	Error detected during creation of SCSI devices access table in extended BIOS data area. Replace SCSI controller, then the motherboard.
HDU Extended BIOS Data Area Error	The memory is insufficient for the extended BIOS data area. Remove the expansion board to create free memory areas.
HDU Interrupt IRQ Config Error	The IRQ selected for SCSI interrupt is configured in edge-triggered mode instead of level- triggered mode. Run ROM Setup utility.
HDU ISA Parameter Table Build Error	An error has been detected while trying to create the AT compatible parameter table pointed to by INT 41h or 46h. Replace the SCSI controller, then the motherboard.
Hard Drive Initialization Error	Error during drive initialization. Check the SCSI connection and the drive power supply, run the diagnostic, replace the drive, then the SCSI controller.
Invalid Hard Disk CMOS Config Error	AT type drives are configured in the EEPROM as SCSI type drives or the SCSI type drives are configured in the EEPROM as AT type drives. Run ROM Setup utility.
PCI DAGGER AND LANCE CONTROLLER ERROR MESSAGES	
Device Name Not Available	When initializing, for the SCSI Inquiry command, there is no information available concerning the devices connected to the SCSI controller.
BIOS Not Installed	There are no SCSI devices connected to the controller that are supported by the BIOS.
Host Adapter Configuration Error	SCSI controller configuration error. Activate the ECU or ROM Setup utility.
Can't Locate Host Adapter	The Adaptec BIOS cannot communicate with the Dagger 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 at initialization. Check the connections and run the test on the device.
Time-out Failure During SCSI Inquiry Command!	There is no interrupt from the Dagger controller when the SCSI Inquiry command is sent during initialization. Replace the SCSI controller.
Time-out Failure During SCSI Test Unit Ready Command	There is no interrupt from the Dagger controller when the SCSI Test Unit command is sent during initialization. Replace the SCSI controller.
Time-out Failure During SCSI Start Unit Command	There is no interrupt from the Dagger controller when the SCSI Start Unit command is sent during initialization. Replace the SCSI controller.
!!! WARNING!!!" A drive larger than 1 gigabyte has been detected with 64 head / 32 sector partitioning. This drive is not compatible with 255 head / 63 sector translation which has been enabled on this adapter. Data could be corrupted! Please check your system setup! Press any key to continue	An HDU with more than 1 GB has been formatted, with the controller configured to support lower capacity HDUs. Change configuration setting with ECU.
SYSTEM ERROR MESSAGES	
CPU Exception Error Has Occurred CPU Exception: xx POD Checkpoint: xxxx CPU Error Code: xx Physical Address: xxxx.xxxx	Reboot the system, if the problem persists replace the CPU board.

ERROR MESSAGE	DESCRIPTION
Configuration Memory Checksum Error	The configuration in the EEPROM memory is damaged. Activate the ECU.
CMOS Battery Lost Power	RTC CMOS battery low detected. Replace the motherboard and activate ECU.
CMOS Clock/Calendar Error	The real time clock does not keep the correct date and time. Run ROM Setup utility, replace the motherboard.
Clock Stopped	Run the diagnostic, replace the motherboard.
CMOS RAM Checksum Error	An error has been detected in the CMOS RAM data check. Activate ECU, run the diagnostic, replace the motherboard.
CMOS RAM Read/Write Error	CMOS RAM read/write error. Check the state of the RTC battery, then replace the motherboard.
Fail-Safe Timer Error	Error during the EISA timer test. Run the diagnostic, replace the motherboard.
CPU Slow-Down Timer Error	Error during CPU slow-down test. Run the diagnostic, replace the CPU board.
CPU Auto-Slow Timer Error	Error during CPU Auto-Slow timer test. Run the diagnostic, replace the CPU board.
CPU1 (Pentium APP) Ckpt: xxh Error	The Pentium APP (Application Processor) has failed the diagnostic test. The xxh value represents the checkpoint number which has failed. If this message is displayed the BIOS will not perform the IPC test on the secondary Pentium processor. Replace the CPU board.
CPU0 (Pentium BSP) IPC Interrupt Error	The Pentium BSP (Bootstrap Processor) has failed the internal interrupt test. Replace the CPU board.
CPU Triple Fault Error Has Occurred !!	CPU locking error. Run the diagnostic, replace the CPU board.
DMA Bus Timeout Error	Run the diagnostic, replace the motherboard.
CMOS Video Shadow RAM Config Error	EEPROM configuration error for video shadow. Run Setup utility.
Video Option ROM Checksum Error	Optional board video BIOS checksum test failed. Run the diagnostic, remove the optional board.
Video Shadow at E000:/E800: Error	Video BIOS shadow failed as made in an area probably occupied. Run the Setup utility.
xxxxh Segment Shadow RAM Disabled/Error	An error has been detected during the optional ROM shadow in segment xxxh. Configuration of the optional board is incorrect, activate ECU.
Option ROM at xxxx:0000 Error	Optional ROM error. Configuration of the optional board is incorrect, activate ECU.
Invalid ROM Setup Image Unable to Invoke ROM Setup	Displayed when key F1 is pressed to run ROM Setup. ROM checksum error. Activate ECU.
Unknown EISA Board(s) Detected Unable to Invoke ROM Setup	Activate ECU.
Timer Ratio Test Error	CPU Timer Ratio test failed. Run the diagnostic, replace the CPU board.
Video Configuration Error	The type of video installed is not that configured. Run ROM Setup utility.
Press Enter Key to Continue	A non fatal error has occurred, the system can continue to operate by pressing Enter. Activate ECU.
Configuration Error(s) Detected... Run System Configuration Program	Configuration error. Activate ECU.
Hardware Error(s) Detected... Run Diagnostics Program	System hardware error. Run the diagnostic.
xxxx: Segment Shadow RAM Disabled/Error	Run ROM Setup utility.
RUN-TIME NMI ERROR MESSAGES (AFTER POD)	
NMI Error - PCI Transmitted Data Parity Error	Parity control error detected during a PCI board data transmission. Replace the board, then the motherboard.

ERROR MESSAGE	DESCRIPTION
NMI Error - PCI Received Data Parity Error	Parity control error detected during PCI board data reception. Change the board, then the motherboard.
NMI Error - PCI Address Parity Error	Parity control error detected on a PCI board address bus. Replace the board, then the motherboard.
NMI Error - PCI Level 2 Cache Parity Error	Parity control error detected in a PCI board second level cache. Replace the PCI board.
NMI Error - PCI Shutdown Special Cycle Error	A PCI board shutdown has taken place. Replace the board, then the motherboard.
NMI Error - PCI Target Abort Error	Error on PCI bus in target - abort cycle. Replace the PCI board, then the motherboard.
NMI Error - Unknow PCI Error Status Register Value	Unidentified PCI error. Replace the PCI board, then the motherboard.
NMI Error - System Memory Parity Fault	Parity error detected in the system memory. Replace the SIMMs, then the CPU board.
NMI Error - I/O Channel Check in Slot: xx	Error detected in I/O channel check on the board in slot x. Replace the board,, then the motherboard.
NMI Scanning Base/Extended Memory for Errors	Error in I/O channel check and parity control viewed before the BIOS scans the system memory to reproduce the error condition. Replace the SIMM memory modules, then the CPU board.
Address Where Error Occurred = xxxxxxxxh in System Memory Bank: x	If the error has been reproduced, the BIOS shows the 32 bit address and the number of the memory bank (0-3). Replace the SIMMs on the indicated bank, then the CPU board.
Unable to Locate Parity/IOCC Error	Not possible to locate the NMI error.
Unable to Clear the Error Condition	The system cannot clear the error condition.
NMI Error - EISA DMA Bus Timeout in Slot: x	Timeout error on EISA bus for the board in slot x. Replace the board then the motherboard.
NMI Error - EISA System Software Generated NMI	EISA subsystem software has generated an NMI. Replace CPU board and the motherboard.
NMI Error - EISA Fail-Sale Timer Timeout	Timeout error on Fail Sale Timer EISA. Replace the motherboard.
System is Halted - Please Reset	Displayed as last message if one of the previous messages is shown.
RUN-TIME ON MICROPROCESSOR ERROR MESSAGES (AFTER POD)	
ERROR - CPU Machine Check Condition Occurred	Indicates an error inside the CPU. The specific cause and address are indicated by one of the following messages. If the error is a locking error the message is preceded by "LOCKED".
Interrupt Acknowledge Cycle at Address: xxxxxxxxh	Replace the CPU board.
Special Cycle at Address: xxxxxxxxh	Replace the CPU board.
I/O Read Cycle at Address: xxxxxxxxh	Replace the CPU board.
I/O Write Cycle at Address: xxxxxxxxh	Replace the CPU board.
Code Read Cycle at Address: xxxxxxxxh	Replace the CPU board.
Unknown Cycle at Address: xxxxxxxxh	Replace the CPU board.
Memory Read Cycle at Address: xxxxxxxxh	Replace the CPU board.
Memory Write Cycle at Address: xxxxxxxxh	Replace the CPU board.
FATAL ERROR, System Halted	Displayed as last message after the address and type of CPU cycle have been indicated. It indicates that the error is not recoverable.
PASSWORD ERROR MESSAGES	
Invalid Password	Enter correct password, if it is not known set jumper JP1 on motherboard.

ERROR MESSAGE	DESCRIPTION
SYSTEM HALTED!	This appears after 3 incorrect passwords have been entered, if the password is not known, set jumper JP1 on the motherboard.

Note: *All the remote terminal error messages are displayed on the monitor/terminal or on the console display and are followed by the message "Press Enter to Continue" so that the user can attempt to solve the problem. If the system is configured as "Remote Terminal" or with "None" and the video and keyboard are not connected, no error message will appear.*

Note: *The error messages relating to the RAID DPT SCSI controllers are listed in Appendix C, in the section dealing with the specific controller.*

NOTES ON SYSTEM CONFIGURATION WHEN MORE THAN ONE SCSI CONTROLLER IS INSTALLED

ADDITIONAL GO624/2096 SCSI CONTROLLER

- The DAGGER GO624 SCSI controller is not compatible on the SNX 140 75. Only the DAGGER GO2096 controller is compatible on the SNX 140 75. The GO2096 can also be installed on the SNX 160E.
- For the Dagger controller to work correctly in configurations with multiple SCSI controllers, BIOS release 1.09 (or later) is required on the SNX 140 66 and 140/R, release 1.07 (or later) on the SNX 160 and 160/R. The SNX 140 75 and 160E can correctly manage the Dagger controller from the first series models.
- The Dagger controller cannot be installed if the GO622 controller is already present with OS/2 ver. 2.x or NT ver. 3.1. This restriction will be removed with the future releases of the OS/2 2.x and NT 3.1 drivers.
- The system BIOS is structured in a way that the scan sequence during system bootstap is firstly performed on the EISA slots, then on the PCI slots. Since the additional Dagger controller is supported from BIOS release 1.09 on the SNX 140 66 / 140/R, release 1.07 on the SNX 160 / 160/R and from its first series release on the SNX 140 75 and 160E, the scan sequence during system bootstrap performed on the EISA slots starts from slot 7 and goes to slot 3, while the sequence on the PCI slots starts from slot 3 and goes to slot 1 (from bottom to top). Consider the following rules when connecting a bootable HDU in a system with more than one SCSI controller:
  - If the system SNX 140 66 / 160 already configures an EISA GO622 controller and a PCI GO624 controller is added, the bootable HDU will remain connected to the EISA controller installed in a prioritary slot. Instead, if you wish to connect the HDUs to a Dagger controller, they first need to be disconnected from the Arrow controller and then reconnected to the Dagger. Using the Configurator, the bootable drive has to then be disabled from the Arrow controller and enabled with the Dagger controller. Select the System Configuration option "Hard Disk Storage Configuration" followed by "Drive C"; the following options are displayed:
    - "Two Channel SCSI" to enable the bootable drive connected to the Arrow controller (if installed in a prioritary slot)
    - "Not Present" to disable the bootable drive connected to the Arrow controller and then enable it for the next SCSI controller in order of priority. Bear in mind, however, that this operation will result with the loss of all the data stored on the HDUs which have been moved. This is because by changing the type of controller, the HDUs are no longer compatible due to the different geometry assigned to them by the controller and therefore the HDUs need to be cancelled (see the CLEANHDU Utility, Appendix M) and the operating system reloaded.
  - If the system configures an EISA GO2044 controller and you are going to add the PCI Dagger, the bootable HDU must be connected to the EISA controller.
  - If the system already configures a PCI Dagger controller (slot 1) and a second Dagger controller is added, the bootable HDU must be disconnected from the controller residing in slot 1 and reconnected to the new controller (slot 2 or 3) since this controller is installed in a slot which is prioritary over slot 1.
  - If the SNX 140 75 / 160E already configures a PCI GO2061 controller (slot 1) and a Dagger controller is added (slot 2 or 3), the bootable HDU remains connected to the RAID controller since only removable peripherals are connected to the Dagger controller even though it occupies a prioritary slot.

In brief, the SCSI controller which can only connect removable peripherals can be installed in any slot, while the controller which connects the bootable HDU must be installed in a prioritary slot according the above specified rules.

ADDITIONAL EISA RAID DPT GO2044 SCSI CONTROLLER

The GO2044 controller cannot be installed if the GO2061 is already present in the system. The system BIOS is structured in a way that the scan sequence during system bootstap is firstly performed on the EISA slots, then on the PCI slots. The scan sequence on the individual EISA or PCI slots, however, differs depending on the system BIOS release. Consequently, the following rules must be taken into consideration when connecting a bootable HDU in a system with more than one SCSI controller:

- On the SNX 140 66 and 140/R systems with BIOS releases earlier than 1.09, and on SNX 160 / 160/R systems with BIOS releases earlier than 1.07, the scan sequence during system bootstrap performed on the EISA slots starts from slot 3 and goes to slot 7, while the sequence on the PCI slots starts from slot 1 and goes to slot 3 (from top to bottom). Consequently, the following configuration rules must be considered:
  - If the system already configures an EISA GO622 controller (slot 4) and an EISA GO2044 controller is added (slot 5, 6 or 7), the bootable HDU will remain connected to the GO622 controller installed in a prioritary slot. Instead, if you wish to connect the HDUs to the GO2044 controller only, they first need to be disconnected from the GO622 controller and then reconnected to the GO2044. Using the Configurator, the bootable drive has to then be disabled from the Arrow controller. Select the System Configuration option "Hard Disk Storage. Configuration" followed by "Drive C"; the following options are displayed:
    - "Two Channel SCSI" to enable the bootable drive connected to the Arrow controller (if installed in a prioritary slot).
    - "Not Present" to disable the bootable drive connected to the Arrow controller and then enable it for the next SCSI controller in order of priority.

    Bear in mind, however, that this operation will result with the loss of all the data stored on the HDUs which have been moved. This is because by changing the type of controller, the HDUs are no longer compatible due to the different geometry assigned to them by the controller and therefore the HDUs need to be cancelled (see the CLEANHDU Utility, Appendix M) and the operating system reloaded.
  - If the system already configures an EISA GO2044 controller (slot 4) and you are going to install a second EISA GO2044 controller (slot 5, 6 or 7), the bootable HDU will remain connected to the first controller since it is installed in the prioritary slot 4.
  - This BIOS release cannot support the GO624 controller in mixed configurations.
- On the SNX 140 75, 160E, from BIOS release 1.09 on the SNX 140 66 / 140/R and from BIOS release 1.07 on the SNX 160 / 160/R, the scan sequence during system bootstrap performed on the EISA slots starts from slot 7 and goes to slot 3, while the sequence on the PCI slots starts from slot 3 and goes to slot 1 (from bottom to top). Consequently, the following configuration rules must be taken into consideration:
  - If the SNX 140 66 / 160 already configures an EISA GO622 controller (slot 4) and an EISA GO2044 controller is added (slot 5, 6 or 7), the HDUs will have to be disconnected from the GO622 controller and connected to the GO2044 controller since this board is in a prioritary slot. Bear in mind, however, that this operation will result with the loss of all the data stored on the HDUs which have been moved. This is because by changing the type of controller, the HDUs are no longer compatible due to the different geometry assigned to them by the controller. The HDUs therefore need to be cancelled (see the CLEANHDU Utility, Appendix M) and the operating system reloaded.

– If the system already configures a PCI Dagger controller and an EISA GO2044 controller is added, the HDUs will have to be disconnected from the PCI controller and reconnected to the EISA controller since this board is in a prioritary slot. Bear in mind, however, that this operation will result with the loss of all the data stored on the HDUs which have been moved. This is because by changing the type of controller, the HDUs are no longer compatible due to the different geometry assigned to them by the controller. The HDUs will therefore need to be cancelled (see the CLEANHDU Utility, App. M) and the operating system reloaded.

– If the system already configures an EISA GO2044 controller (slot 4) and a second EISA GO2044 controller is added (slot 5, 6 or 7), the bootable HDU will remain connected to the first controller even though this controller is in a slot with a lesser priority.

In brief, the SCSI controller which can only connect removable peripherals can be installed in any slot, while the controller which connects the bootable HDU must be installed in a prioritary slot according the above specified rules.

ADDITIONAL RAID DPT GO2061 SCSI CONTROLLER

- This controller can only be installed on the SNX 140 75 and 160E; the GO2061 cannot be installed if the GO2044 controller is already present in the system.
- The system BIOS is structured in a way that the scan sequence during system bootstrap is firstly performed on the EISA slots starting from slot 7 and proceeding to slot 3, and then on the PCI slots starting from slot 3 and proceeding to slot 1 (from bottom to top). Consequently, the following rules must be taken into consideration when connecting a bootable HDU in a system with more than one SCSI controller:
  – If the system is equipped with a PCI Dagger controller installed (slot 1) and a PCI GO2061controller is added for the connection of HDUs only, disconnect all the HDUs from the Dagger controller and reconnect them to the GO2061 (slot 2 or 3). Bear in mind, however, that this operation will result with the loss of all the data stored on the HDUs which have been moved. This is because by changing the type of controller, the HDUs are no longer compatible due to the different geometry assigned to them by the controller and therefore the HDUs need to be cancelled (see the CLEANHDU Utility, Appendix M) and the operating system reloaded.
  – If the system is equipped with a PCI GO2061 controller (slot 1) and a second GO2061controller is added, move the first controller from slot 1 to the next prioritary slot and then insert the new controller into slot 1, or disconnect all the HDUs from the controller in slot 1 and connect them to the new controller installed in a slot (slot 2 or 3) which has priority over slot 1, then configure the new controller with the same parameters assigned to the first.

  In brief, the SCSI controller which can only connect removable peripherals can be installed in any slot, while the controller which connects the bootable HDU must be installed in a prioritary slot.

SYSTEM CONFIGURATION UTILITIES

The system configuration utilities consist of three to five programs depending on whether the system is equipped with the RAID SCSI controller or not and on the type of controller itself. The first program, called Built-In Setup, resides in the system BIOS EPROM and can therefore be activated directly from the keyboard. The second, third and fourth programs called EISA Configuration Utility (ECU), Configuration Manager (CM) and Storage Manager, respectively, are provided in the Starter Kit. The fifth program called DPT Configuration Utility, is stored in the firmware of the RAID GO2061 controller and can therefore be activated directly from the keyboard.

The Built-in ROM Setup program is described in Appendix E, the Storage Manager in Appendix F, while general information on the configuration software contained in the Starter Kit is provided below.

From January 1996 the SNX 140 75 and 160E Starter Kit is no longer provided on diskettes but on CD-ROM. The Starter Kits on diskettes and on CD-ROM allow the same configuration operations even though they use two different user interfaces and, in some cases, similar but not identical options.

STARTER KIT ON CD-ROM

This Starter Kit consists of two 3.5" 1.44 MB diskettes and a CD-ROM (Orchestra Systema CD-ROM).

- **Boot.** This diskette is used to boot the system and access the contents of the CD-ROM. It also contains the Plug and Play Configuration Manager Utility that displays the configuration of PCI and ISA Plug and Play boards.
- **Diagnostics.** This diskette contains a set of low level tests to be performed on the system hardware components. It is suggested that the service engineer use the System Test diskette for diagnostic purposes which guarantees a more extended test execution.
- **Orchestra Systema CD-ROM.** This CD-ROM contains all the software that can be installed on the system (for example operating systems, drivers), including all the available configuration utilities:
  - Learn Configure. An online document to refer to during the different configuration operations.
  - Configure. Configures the system after it is powered on for the first time and each time a board is added or removed.
  - Set System Security. Sets different system access software protections.
  - DPT Storage Manager. Checks the hardware configuration of the RAID SCSI controller and of the devices connected to it in addition to allowing the configuration of Array groups (see Appendix F).
  - Set Features. Personalizes the system and allows to obtain its information.
  - Create User Diskette. Creates a backup copy of the Configuration Utilities on diskette in case the system needs to be reconfigured and the CD-ROM drive cannot be used.
  - Review Global Settings. Displays information on the hardware configuration of the system and of its components.

STARTER KIT ON DISKETTES

For systems that are not equipped with a RAID DPT SCSI controller, this Starter Kit consists of seven 3.5" 1.44 MB diskettes: three User Disks, 1 video driver, 2 SCSI drivers for the Dagger and one (H.A.L.). For systems equipped with the RAID DPT SCSI controller, besides these seven diskettes another four 3.5" 1.44 MB disks are provided: two containing the Storage Manager Utility and the drivers for the supported operating systems and another two diskettes for the mangement of the temperature sensors.

- **User Disk - System Configuration.** One disk available in English only:
  - Automatically configures EISA boards and provides a support for the configuration of ISA boards, by means of the EISA Configuration Utility.
  - Contains the Plug and Play Configuration Manager Utility for the configuration of PCI and ISA Plug and Play boards
  - Supports the ISA Configuration File Library disk which provides the jumper settings of the more renown optional ISA boards
  - Supports system Setup and personalization
  - Supports the diagnostics disk in the appropriate language.
- **User Disk - Diagnostics**. The Diagnostics disk gives the choice between five languages. It runs a set of low level tests on the hardware modules installed in the system. It is suggested that the Service Engineer use the System Test disk so that more complete tests can be run.
- **User Disk - ISA Configuration (CFG) File Library**. Includes the *.CFG files for the different ISA expansion boards that can be added to the system. Since this disk only contains /US directories and .CFG data files, it can be used in any language.
- **Storage Manager.** This utility is only available for system equipped with the RAID SCSI controller. It checks the hardware configuration of the RAID controller and of all connected devices, configures the disk arrays and runs SCSI subsystem diagnostics.
- **Resilience Support Driver.** Available for resilience system versions only, these drivers manage high temperature indications. Thermal sensors on the swap board detect the temperture in the board and disk areas and signal any faults through the SYS FAULT LED on the console. In case of high temperatures in the board or disk area, the drivers will act as follows:
  - Issue overtemperature messages to the user
  - Store this faulty condition in an error logging file
  - Shut down the system automatically.

  If the system is also equipped with an external UPS and has the PowerChute Plus 4.2 software (or later releases) installed, in addition to being shutdown the system is also powered off as a safeguard against damage. Resilience support drivers are available for the following operating systems:
  - Microsoft Windows NT version 3.x
  - Novell NetWare version 3.1x and 4.xx
  - SCO Unix 3.2 version 4.2
  - SCO Open Server Network System 3.0.0
  - SCO Open Server Enterprise System 3.0.0.

Note: *The Olivetti UNIX SVR4.0 ver. 2.4.1 operating system already integrates thermal sensors.*

- **SCSI Drivers.** Two diskettes contain the SCSI drivers for the Dagger controller.
- **EVD Drivers.** One diskette contains the video drivers for DOS and Windows.
- **H.A.L.** A diskette which grants Windows NT 3.1 the possibility of managing dual-processor systems. It therefore cannot be used on monoprocessor systems.

CONFIGURATION OF OPTIONAL BOARDS

Any system device requires the availability of resources to use in order to work and communicate with other devics. 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 insalled 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 P&P 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 a PCI board, the Dagger SCSI controller has some parameters (for example termination or ID) that need to be defined or checked with the defaults by means of the ROM Setup Utility or, preferably, by means of the ECU. In this way also the RAID PCI SCSI controller must be configured by means of the configuration utility resident in the board's own firmware.*

Note: *Full support for the Configuration Manager driver and the resolving of the conflicts between resources for PCI and ISA Plug and Play boards is available from ECU release 3.x.*
The ECU version for these systems is 2.07; its limitations are described at the end of this chapter.

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 possible 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.

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 AT LINE BOARDS

The Multiport and LAN/WAN boards with AT interface can usually be mapped in the first megabyte and megabyte F. The first megabyte as seen from the memory map is mainly occupied by system memory, and it is not possible to install boards mapped at addresses already occupied by this memory. However there are two memory blocks available which are 128 KB (from 80000h to 9FFFFh, 512 to 640 KB) and 96 KB (from C8000 to DFFFFh, 800 to 896 KB). The LAN WAN AT boards must be jumpered for mapping within the 96 KB block (with a 32 KB buffer, 3 can be installed, with a 16 KB buffer, up to 6), whereas the Mulktiport AT boards, if installed in the first MB, can only be mapped within the 128 KB block.

If an AT8/16 board is installed in the first megabyte on these systems, the memory segment between 512 KB and 640 KB is automatically disabled (this cannot be disabled manually with the ROM Setup Utility nor with User Disk). However, the AT boards can also be mapped in megabyte F. In fact the system chipset can open the memory spaces in megabyte F to insert external memory. If the AT8/16 board is mapped in the first MB and therefore jumpered for 16-bit data transfers, the system always sees it as a 128 KB memory block even if each board actually uses 16 KB and therefore, with a maximum of 4 boards, 64 KB. If the boards are installed in MB F they occupy 64 KB each.

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

Note: *AT boards installed in the 128 KB space of the first MB restricts the base memory to 512 KB which is incompatible with some utilities and operating systems, such as SCO, which require a 640 KB base memory.*

The following table gives examples of the assignment of system resources.

TYPE OF BOARD	MAX. NR.	SLOT	IRQ	EX. OF DPM BASIC ADD.	BUFFER SIZE	CFG FILE	NOTES
Motherboard Keyboard Floppy disk COM1 COM2 LPT1 RTC PS/2 mouse	1	-	 1 6 4 3 7 8 12			!OLI0609	
CPU board Timer Coprocessor	1	CPU	 0 13			!OLI1271 !OLI12B1 !OLI12A1	OLI12B1 for the CPU of the SNX 140 75 OLI12A1 for the CPU of the SNX 160 E
GO622	1	4	5, 10, 11, 15			!ADP7782	
GO624/2096	3	1-3	5, 10, 11, 15				The same IRQ can be shared between boards
GO2044	4	4-7	11, 14, 15			!DPTA410	The same IRQ can be shared between boards
GO2061	3	1-3	11, 14, 15				The same IRQ can be shared between boards
Multiport AT8 and AT16	4	3-7	10, 3, 5, 11, 12, 15	8 0000 (1st MB) 8 4000 8 8000 8 C000 F0 8000 (MB F) F2 4000 F5 0000 F6 4000 F8 C000 FA 8000 FC C000	128 KB	!OLIF211 Ver 4.1	The same IRQ can be shared between boards
Multiport EISA ALC	4	3-7	9, 10, 11, 12, 15, 3	No DPM		!CTN0110 Ver. Oct91	The same IRQ can be shared between boards
Multiport EISA STALLION	4	3-7	3, 4, 5, 7, 10, 11, 12, 15,	Below the 1st MB, in MB F (16th) in the 3rd GB	64 KB	!STL0400	The same IRQ can be shared between boards
NPU 9145 NPU 9147S AT Ethernet	4	3-7	3, 9	from C A000 to F 4000 F4 0000 (MB F) F8 0000	8 KB	!OLIF031 Ver. 1.03 !OLIF061 Ver. 1.03	The same IRQ cannot be shared between boards

TYPE OF BOARD	MAX. NR.	SLOT	IRQ	EX. OF DPM BASIC ADD.	BUFFER SIZE	CFG FILE	NOTES
NCU 9141II NCU 9143/S AT Ethernet	4	3-7	9, 10, 12, 3, 5, 7, 15	C 0000 (1st MB) C 4000 C 8000 C C000 D 0000 D 4000 D 8000 D C000 F2 0000 (MB F) F4 0000 F6 0000 F8 0000	16/32/64 KB 128 KB	!OLIF012 Ver. 1.01 !OLIF052 Ver. 1.01	The same IRQ cannot be shared between boards
OC 2123 AT Ethernet	4	3-7	3, 4, 5, 7, 9, 10, 11, 15	from C 0000 to E C000	8 KB	!ISA1063 Ver. 1.01	The same IRQ cannot be shared between boards
NCU 9180 NCU 9181S EISA Ethernet	4	3-7	9, 10, 11, 15	No DPM		!OLI1031 Ver. 1.04 !OLI1041 Ver. 1.02	The same IRQ can be shared between boards
NCU 9172 AT Token Ring	4	3-7	9, 10, 11, 3	with RPL EPROM: from C 0000 to F E000 or see Notes	8 KB	!OLIF1C1 Ver. 1.00	The same IRQ can be shared between boards
LPU 24 LPU 2100 LPU 2400 LPU 3500 LPU 3600 AT WAN	4	3-7	2, 3, 5, 10, 11, 12, 15	C 0000 C 4000 C 8000 C C000 D 0000 D 4000 D 8000 D C000 E 0000 E 4000 E 8000 E C000	16/32/64 KB	!OLIF221 Ver. 1.01 !OLIF241 Ver. 1.01 !OLIF231 Ver. 1.01 !OLIF251 Ver 1.01 !OLIF261 Ver. 1.01	The same IRQ can be shared between boards (except for IRQ 2)

Note: *If not equipped with an RPL EPROM, the AT Token Ring board can interface the system through DMA channels 5, 6, 7 or through the following I/O ports:*
1st board: 0A20-0A23 & 0A30-0A3F
2nd board: 0A24-0A27 & 0A40-0A4F
3rd board: 0A50-0A53 & 0A60-0A6F
4th board: 0A54-0A57 & 0A70-0A7F

USER DISK EVOLUTION

DATE	REL.	REASON FOR CHANGE
04/94	1.04	The User Disk is introduced. Diagnostics Diskette Rel 1.04, System Configuration diskette Rel. 1.04 with Configuration Utility Rel. 2.07, Plug & Play Configuration Manager 1.0. - "Performance Enhancement Features" default setting: "CPU to PCI posting" = Disabled, "EISA to PCI line buffer" = Disabled. - No Arrow controller diagnostics; can be performed indirectly through HDU_DIA.
08/94	1.06 upd1	- Support for "Non-Contiguous Extended Memory"; allows the system to define and recuperate the portions of extended memory which have been disabled so that Computone boards could be installed. - Support for the PCI Dagger SCSI controller; the board single or multiple configuration is controlled by the !OLI7850.CFG, OLI7850.OVL files. The controller must first be physically inserted in the system and then configured; if it is not, it will be impossible to determine the number of PCI slots into which the controller can be inserted. - Remote terminal library update to accept and convert all common ASCII codes into appropriate scan codes; this will allow the correct handling of remote terminal systems and of system passwords defined using non-alphabetic characters. - Support for the PCI Dagger controller in the HDU_DIA diagnostic. - Remote terminal library update so that the system will no longer hang when booted from the User Disk if the serial port is configured in level triggered mode. - Correct display of the keyboard controller FW rel. on the remote terminal without keyboard and with a keyboard password defined. - To support O.S. such as UNIX which require fixed interrupt resources, the possibility of mauallly selecting the IRQ on the Dagger instead of automatically by the BIOS. Possible IRQ values are: 5, 7, 10, 11, 12, 14 and 15; the default IRQ is 10. - The ROM Revision Utility displays information on the devices connected to the Dagger controller. - Default setting for Performance Enhancement Features is corrected to solve the problems in Netware; the "PCI to memory write posting" option is changed to Disabled while the "EISA to PCI line buffer" option is changed to Enabled.
11/94	1.08	This release is also compatible with the SNX 140/R and SNX 160/R. - Support for the RAID EISA SCSI board (!DPTA410.CFG file). - The default setting for the PCI Dagger controller has changed so that the Start Command is always issued to the HDUs. - The User Configuration releases are separated from the User Diagnostic releases.
03/95	1.09	This release is compatible with motherboard P2.1 Rev. F or P2.2 Rev A and later, CPU GO896 P2.0 Rev A with BIOS 1.09 and later, CPU GO898 P1.0 Rev F with BIOS 1.06 and later. - Default setting for Performance Enhancement Features is corrected as follows: CPU to memory write posting = Disabled (for SNX 140/140R), Enabled (for SNX 160/160R); EISA to PCI line buffer = Enabled. - Plug & Play Configuration Manager updated from rev. 1.0 to 1.21. - Speaker Volume support, before only possible through ROM Setup. - Support for the Stallion C-MUX 8-32E board (!STL0400.CFG file). - SCSI Library ver. 0.26 to correctly support the DPT SCSI controller. - The default setting for Caching Parameters on DPT SCSI Host Bus Adapter is set to EISA Config Overrides.

DATE	REL.	REASON FOR CHANGE
05/95	1.10	This release is also compatible with SNX 160/RS 100 MHz and SNX 160E; the compatible levels are: motherboard P2.1 Rev. F or P2.2 Rev A and subsequent revisions, CPU GO896 P2.0 Rev A with BIOS 1.09 and later, CPU GO898 P1.0 Rev F with BIOS 1.06 and later, CPU GO2063 lev. Nasc with BIOS 1.08 and later. - Support for the 100 MHz Pentium 100 processor (file !OLI12A1.CFG added). - Addition of the SNX 160E and SNX 160/RS logotype. - IRQ for Dagger controller no longer displayed since a warning message appeared whenever two IRQs were available for the same Dagger controller. - Changes made to the handling of "Performance Enhancement Features" which was unable to update the default values with PCI boards installed. - The selection of the IRQ for the Dagger board is made through the SCI file; if this file has the wrong IRQ, the information is taken from NVRAM during the POD. This new configuration procedure cannot, therefore, be used when the controller is installed for the very first time. Thus the Configuration Utility will have to be activated twice: the first time to store the slot for the new board, the second time to run the setup with the SCI file. Obviously the PCI slot stored in the SCI file must coincide with the slot in which the Dagger board is actually installed. - The Primary Operating System, Keyboard Speed, LED Numlock and Speaker Volume selections are controlled by the overlay so that setup can be performed correctly with the SCI file. - The default selection regarding the Send Start SCSI Command for the Arrow board is changed to Yes. - Avoid using the LOCK feature with the GO2061 controller to prevent errors during the POD.
08/95	1.12	This configurator release is only available for the SNX 140 Systema 75 MHz. Compatible levels are: motherboard P2.1 Rev. F or P2.2 Rev A and later, CPU GO2076 Lev. Nasc with BIOS 2.00. - Support for the 133 MHz Pentium 133 (file !OLI12C1.CFG added). - Support for the 75 MHz Pentium 75 (file !OLI12B1.CFG added). - The !!CFG.NDX on the ISA Configuration File Library diskette has been updated to slove the problem with the long standby times requested during the creation of the index of .CFG files when the diskette is write-protected. - Updated overlay code for the Dagger controller to avoid the message "PCI Configuration Error" at the POD, when all the system resources are in Lock. - "Write Through" selection for second level cache is only available for the SNX 140 66 MHz (Mercury chipset). - Removal of the following .CFG files since the related boards are not in the PdG: !OLI1011.CFG "Olivetti EISA Video Controller (EVC-1)" !OLI1021.CFG "Olivetti EISA SCSI Controller (ESC-1)" !OLI1023.CFG "Olivetti EISA SCSI Controller (ESC-2P)" !OLI1024.CFG "Olivetti EISA SCSI Controller (ESC-2P/FDU)" !OLI1051.CFG "Olivetti EISA Dual SCSI Controller (EFP2/EFP2E)" !OLIF1A1.CFG "Olivetti Video Controller (OVC)" !OLIF201.CFG "Diagnostic subsystem for remote diagnostics".
09/95	1.13	This release, on all models, is also compatible with the SNX 160/RS 133 MHz and SNX 140 75 MHz; compatible levels are: motherboard P2.1 Rev. F or P2.2 Rev A and later, CPU GO896 P2.0 Rev A with BIOS 1.09 and later, CPU GO898 P1.0 Rev F with BIOS 2.00 and later, CPU GO2063 Lev. Nasc with BIOS 2.00 and later, GO2076 Lev Nasc with BIOS 2.00. This release embodies all the modifications already indicated in the previous release 1.12 available with the SNX 140 75 MHz only; furthermore: - Updated motherboard configuration file !OLI0609.CFG to reduce the space requested in NVRAM. In the previous versions, with the 15th Mega disabled and more than 64 MB of total memory, it was not possible to store the configuration.

USER DISGNOSTIC DISK EVOLUTION

DATE	REL.	REASON FOR CHANGE
11/94	1.08	The User Diagnostic and User Configuration diskettes evolve with separate releases starting from User Diskette release 1.08. - Addition of the following diagnostic programs: CDR_DIA, ARW_DIA, DAG_DIA, DAT_DIA.
02/95	1.09	This release is compatible with motherboard P2.1 Rev. F or P2.2 Rev A and later revisions, CPU P5 P2.0 Rev A with BIOS 1.07 and later, CPU P54C P1.0 Rev F with BIOS 1.02 and later. - Corrected the problem with the Dagger DAG_DIA diagnostic program. - Generation of the Report .TXT file with HDU_DIA. - Linking of tests CDR_DIA, STR_DIA, DAT_DIA, HDU_DIA with Rtlink ver. 6.10 - Linking of tests CDR_DIA, STR_DIA, DAT_DIA, HDU_DIA, DAG_DIA, ARW_DIA with SCSI Library ver. 0.26.
12/95	1.11	Release compatible with motherboard P2.1 Rev. F or P2.2 Rev A and later, CPU P5 P2.0 Rev A with BIOS 1.07 and later, CPU P54C P1.0 Rev F with BIOS 1.02 and later. - Solved the problem with Report.TXT of HDU_DIA with HDUs greater than 2 GB. - Addition of the 1 GB Wangtek 51000HT STU in the STR_DIA test - Solved the problem with the read/write buffer test of DAG_DIA - Addition of the Sony 76S CD-ROM in the CDR_DIA test - Addition of the 2 GB HP C1534A, 4 GB HP C1536A, 8 GB HP C1533A, 48 GB HP C1533A (autoloader) models in the DAT_DIA test. On this last drive the diagnostic does not support the Media Changer - Solved the problem on cartridge with CDR_DIA - Solved the problem on the Retension subtest of STR_DIA - Linking of tests DAG_DIA, ARW_DIA with SCSI Library ver. 0.27 - Linking of tests CDR_DIA, STR_DIA, DAT_DIA, HDU_DIA with SCSI Lib. ver. 0.28.

EVD DRIVERS DISK EVOLUTION

DATE	REL.	REASON FOR CHANGE
04/94	1.01	New video driver introduced for DOS and Windows. The diskette is labelled as follows: SNX 1xx, 1xx/R (cirrus 5422) EVD code 2690776 Y.
05/95	1.01	The products SNX 160/E, /RS are added to the label of the EVD diskette. The release remains unchanged, and the diskette is labelled as follows: SNX 1xx, 1xx/E, 1xx/R, 1xx/RS (cirrus 5422) EVD code 2691034 Q.

RESILIENCE SUPPORT DRIVER DISK EVOLUTION

DATE	REL.	REASON FOR CHANGE
11/94	1.0	New Resilience Support driver is introduced. The following disks are available: - SNX 140/R, 160/R Resilience Support Disk 1/2 code 2690952 J - SNX 140/R, 160/R Resilience Support Disk 2/2 code 2690953 N
05/95	1.0	The products SNX 160/E, /RS are added to the labels of the Resilience Support driver diskettes. The release remains unchanged, and the diskettes are labelled as follows: - SNX 1xx, /E, /R, /RS Resilience Support disk 1/2 code 2691032 X - SNX 1xx, /E, /R, /RS Resilience Support disk 2/2 code 2691033 T.

SCSI DRIVERS DISK EVOLUTION

DATE	REL.	REASON FOR CHANGE
04/94	1.0	A new SCSI driver is introduced. One diskette with code 2690777 U.
09/94	1.03 upd 1	New SCSI drivers for the management of PCI Dagger SCSI boards. - One diskette EZ-SCSI for OS/2 Windows NT, Netware code 2690905 N - One diskette for SCO, Unixware code 2690906 S.
03/95	1.04	Addition of a Readme file explaining how to use the PCI SCSI board in the different operating environments. Listed below are the new diskettes: - SCSI Drivers diskette #1 code 2691009 W - SCSI Drivers diskette #2 code 2691010 Q.
05/95	1.05	New SCSI drivers to support the Unixware 2.01 operating system. Listed below are the new diskettes: - SCSI Drivers diskette #1 code 2691040 K - SCSI Drivers diskette #2 code 2691041 L - SCSI Drivers diskette #3 code 2691042 Y.
10/95	1.06	New SCSI drivers to support the 1 GB IBM DPES31080 HDU. This HDU does not work under SCO 3.2.4.2 and Open Server 5.0 with the operating system drivers and with the drivers rel. 1.05 provided in the system Starter Kit.

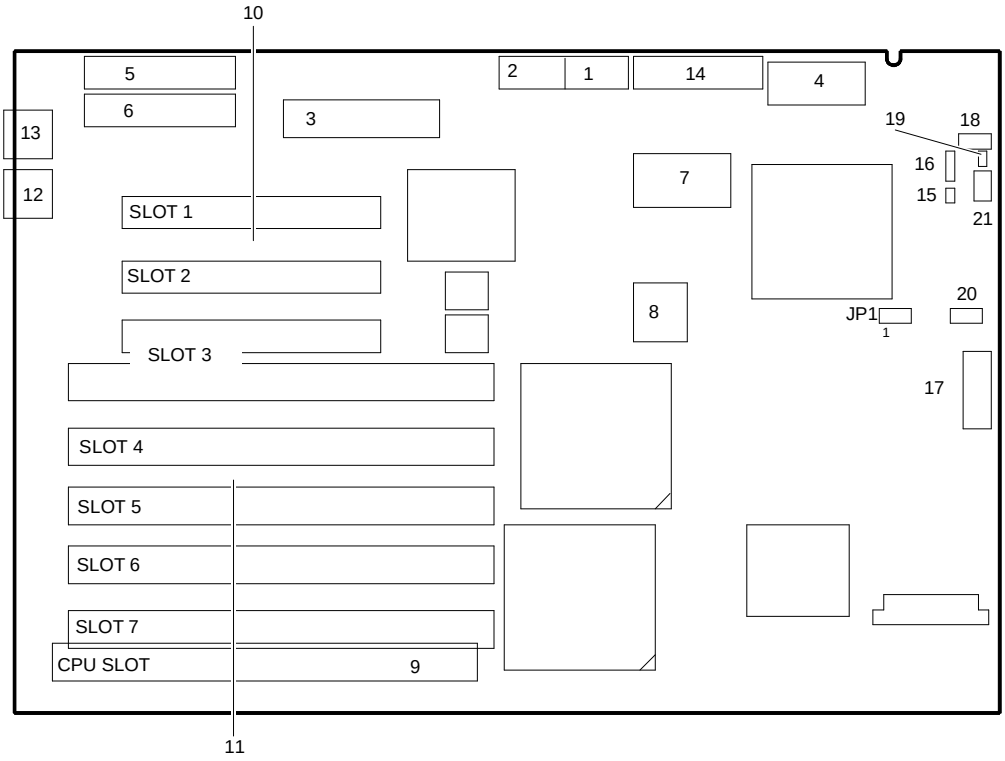
SYSTEM TEST DISK EVOLUTION

DATE	REL.	REASON FOR CHANGE	CODE
04/94	1.03	The System Test for SNX 140 is introduced. It does not run the diagnostics on the Arrow SCSI controller. The test can be indirectly performed through HDU_DIA.	H06070
07/94	1.04	Release made compatibe for the SNX 160.	H06117
11/94	1.06	Release made compatible also for the SNX 140/R and 160/R; the compatible levels are the following: motherboard P2.1 Rev. F or P2.2 Rev A and later revisions, CPU GO896 P2.0 Rev A with BIOS 1.07 and later, CPU GO898 P1.0 Rev F with BIOS 1.02 and later. - CPU_DIA with the /C flag displays the new type of processor. - ARW_DIA and DAG_DIA can correctly handle more than one controller of the same type. - HDU_DIA supports the 4 GB HDU. - RDPT_DIA with the /C flag displays the board FW and BIOS.	H06168
02/95	1.07	- PCI RAID DPT controller management with SCSI Library Rev. 0.25 - Corrected the problem of the CDR_DIA program with the Adaptec 1540CF SCSI controller. - RDPT_DIA: corrected the problem with the /C option in order to view the BIOS version; connection with DPT EISA/PCI controllers. - New function for DAG_DIA: it can now determine how many boards are present on the PCI bus.	H06188

ORCHESTRA SYSTEMA CD-ROM EVOLUTION

DATE	REL.	REASON FOR CHANGE
01/96	1.0	The Orchestra Systema CD-ROM, the boot and diagnostics diskettes are made available on the SNX 140 75 and 160E, in replacement of the hard copy Starter Kit.

MOTHERBOARD BA904/2155



1 Serial port 2 connector J4 (9-pin)
2 Serial port 1 connector J3 (9-pin)
3 Floppy disk connector J9
4 VGA monitor connector J6
5 SP300T/SP300T-3 pow. supply conn. J1
6 DC3/15 / SP300T-3 pow. supply conn. J8
7 Real Time Clock
8 Configuration EEPROM
9 CPU board slot
10 PCI slot
11 EISA slot
12 PS/2 mouse interface connector J10
13 PS/2 keyboard interface connector J7
14 Parallel interface connector J5
15 Reset button connector J26
16 Speaker connector J16
17 Swap board connector J18 (resilience)
18 Board area connector J22
19 Connector J25 (not connected)
20 Connector J13 (not connected)
21 System power LED connector J21

JUMPERS

JUMPER		DESCRIPTION
JP1	PINs 1-2 ON (DEF)	Sets the system to its default configuration and thus any other configuration stored in the configuration EEPROM is ignored along with all the security features.
	PINs 2-3 ON (NORM) *	Normal setting where at power on the system is set according to the configuration stored in EEPROM.

SEQUENCE OF BOARDS INSTALLED IN THE MOTHERBOARD SLOTS

BOARD NAME	MAX. NO. OF BOARDS	SLOT	BUS MASTER
PCI BUS			
Primary PCI Dagger SCSI controller	1	1	YES
Additional PCI Dagger SCSI controller	3	1, 2, 3	YES
Line controllers with a PCI bus	3	1, 2, 3	YES
EISA BUS			
Primary EISA (GO2044 or GO622) SCSI controller	1	4	YES
Additional EISA GO2044 SCSI controller	4	4, 5, 6, 7	YES
Line controllers with an EISA bus (ALC, Stallion, etc.)	4	3, 4, 5, 6, 7	YES
Line controllers with an AT bus (ISA)	4	3, 4, 5, 6, 7	YES
DEDICATED BUS			
CPU board	1	CPU SLOT	-

Notes:

- *The primary SCSI controller is always inserted in PCI slot 1 or EISA slot 4.*
- *Slot 3 physically consists of 2 slots: 1 PCI and 1 EISA. These two slots are, however, logically considered as a single, shareable, slot since only one board can be fitted being both slots physically very close to each other. A PCI board will be installed in the upper PCI slot, while an EISA, ISA or ISA Plug & Play board will be installed in the lower EISA slot.*
- *There are no priorities to take into account as far as free PCI or EISA slots are concerned unless additional SCSI controllers are installed. In this case the bootable HDU must be connected to the HDU controller installed in the prioritary slot (see the section entitled "Notes on the Configuration of a System with more than one SCSI Controller").*

BOARD BA904 P. 2.2 (P.c.b. Code 498481 R) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
04/94	Nasc	498480 U	The board is introduced. KB controller 8.5. At this board level (Nasc) the P5 CPU cannot be replaced by the P54C CPU.	Factory
06/94	01		Board also compatible with the SNX 160 1) Faulty NCU 9145 board diagnostics due to timing violations during refresh: remove 3 resistors and 3 wirings, add 2 resistors and 4 wirings. 2) Connector J1 removed for cost reduction purposes.	Factory
04/95	02		Component Super I/O FDC37C665 step G replaced with the new FDC37C665 rev. A mask E.	Factory
Out of stock	02S1		The GD5422 video controller is no longer manufactured by Cirrus Logic; replace it with a pin-to-pin equivalent and software-compatible GD5424. Board no longer manufactured, modification to be made until the older components are no longer in stock.	Field
1st return	02S2		Within the frame of time in which the system is powered off and the printer still on (connected to the parallel interface), random characters are generated that the printer interprets as being valid; this results with undesired printouts or paper skips. This cause has been detected in the sizing of the pull-up resistors of some of the signals of the subject interface: replace the 1 KOhm resistors R186, R191, R192, R194 with 4.7 KOhm resistors. Board no longer manufactured so the modification is to be made at the first return or repair.	Field
1st return	02S3		Solved the loss of the DPT board configuration in the power on/power off transistors in a system connected via parallel interface to a printer which is always on. This cause has been detected in the sizing of the pull-up resistors of some of the signals of the subject interface: replace the 1 KOhm resistors R187, R191, R192, R194 with 4.7 KOhm resistors. Board no longer manufactured so the modifiction in field is mandatory with the retrofiting for Leeds/Halifax (UK), and at first return for all other systems.	Field
Out of stock	02S4		New Step-B0 masks for the ESC and PCEB components: replace ESC (U26) from step A1/2 to step B0, N.F: GA0Y; replace PCEB (U39) from step A1/2 to step B0, N.F: GA0X. This modification involves the following trimmings and wirings: trim pin E24 (side B) on J24, wire pin E24 with pin E25 (side B) on J24. Replacement of phased-out RTC component DS1287 with the alternative RTC DS1287A. Board no longer manufactured, modification to be made until the older components are no longer in stock.	Field
Out of stock	02S5		Due to the unavailability of the 85C244-66 type PAL mounted in pos. U45 (GKWA), the alternative GAL22V10 will be used which when programmed becomes WP64. Board no longer manufactured, modification to be made until the older components are no longer in stock.	Field

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
1st return	02S6	498480 U	Problem solved with the TRICOM 3C592 - 3C597 network boards. The system would crash after board configuration due to the delayed generation of the AENx signals. Replace the PAL GKW5 in pos. U23 with PAL WP69 (new program); make four wirings: from U26 pin 120 to U23 pin 11, from U26 pin 119 to U23 pin 12, from U26 pin 118 to U23 pin 1, from U26 pin 117 to U23 pin 8; trim from U23 pin 8 and its path. Board no longer manufactured, modification to be made at the first return or during repair.	Field

BOARD BA2155 (P.c.b. Code 654305 K) EVOLUTION

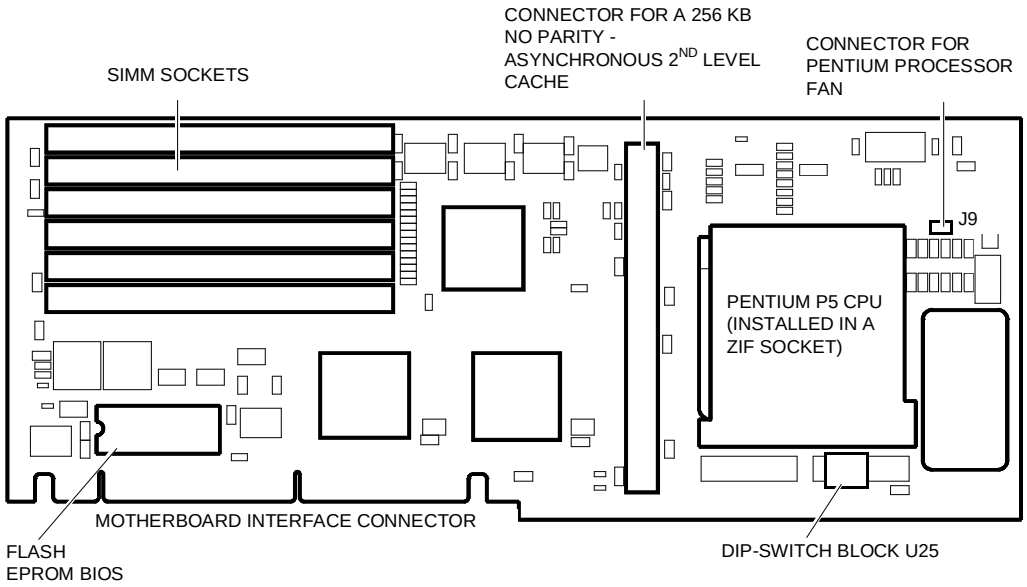
DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
01/95	Nasc	562156 Z	New board replacing the BA904 to recover the wirings.	Factory
01/95	01		No connection between GND and logic ground (video area): 1 inductor and 3 resistors removed, one resistor replaced.	Factory
04/95	02		Cost reduction: 1 oscillator, 15 resistors, 1 RX/TX, 1 transistor, 1 capacitor, 3 connectors (J25, J27, J2), 5 buffers and 1 LED removed.	Factory
05/95	03		Super I/O component FDC37C665 step G replaced with the new FDC37C665 rev. A mask E.	Factory
07/95	04		Video controller GD5422 no longer manufactured by Cirrus Logic; this component is replaced by the pin-to-pin equivalent and software-compatible GD5424.	Factory
10/95	05		- Within the frame of time in which the system is powered off and the printer still on (connected to the parallel interface), random characters are generated which the printer interprets as being valid; this results with undesired printouts or paper skips. This cause has been detected in the sizing of the pull-up resistors of some of the signals of the subject interface: replace the 1 KOhm resistors R186, R191, R192, R194 with 4.7 KOhm resistors. - A failure has been detected of component GD5422 on systems that use the DSM 40091 monitor. The cause has been found to be the imperfect loopback between logic ground and GD5422 ground: attach pin 1 (cathode) of diode D2 to pin 2 of capacitor C50, and add three 0 Ohm resistors in positions 267, 288, 302.	Factory
1/96	01AG		Solved the loss of the DPT board configuration in the power on/power off transistors in a system connected via parallel interface to a printer which is always on. This cause has been detected in the sizing of the pull-up resistors of some of the signals of the subject interface: replace the 1 KOhm resistors R187, R191, R192, R194 with 4.7 KOhm resistors. Modifiction in field is mandatory with the retrofiting for Leeds/Halifax (UK), and at first return for all other systems. Due to the unavailability of the 85C244-66 type PAL fitted in pos. U45 (GKWA), the alternative GAL22V10 will be used which when programmed becomes WP64.	Factory
1/96	02AG		New Step-B0 masks for components ESC and PCEB: replace ESC (U26) from step A1/2 to step B0, N.F: GA0Y; replace PCEB (U39) from step A1/2 to step B0, N.F: GA0X. Replacement of phased-out RTC component DS1287 with the alternative RTC DS1287A.	Factory

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
3/96	07	562156 Z	Problem solved with the TRICOM 3C592 - 3C597 network boards. The system would crash after board configuration due to the delayed generation of the AENx signals. Replace the PAL GKW5 in pos. U23 with PAL WP69 (new program); make four wirings: from U26 pin 120 to U23 pin 11, from U26 pin 119 to U23 pin 12, from U26 pin 118 to U23 pin 1, from U26 pin 117 to U23 pin 8; trim from U23 pin 8 and its path.	Factory
6/96	03AG		To optimize the supply of the different components of this board: introduction of a "strategic" B.O.M.	Factory

BOARD BA2218 (PNS SPAIN) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
0695	Nasc	210655 Q	New board for the SNX 140/160 PNS Spain.	Factory
07/95	01		Video controller GD5422 no longer manufactured by Cirrus Logic; this component is replaced by the pin-to-pin equivalent and software-compatible GD5424.	Factory
10/95	02		- Within the frame of time in which the system is powered off and the printer still on (connected to the parallel interface), random characters are generated which the printer interprets as being valid; this results with undesired printouts or paper skips. This cause has been detected in the sizing of the pull-up resistors of some of the signals of the subject interface: replace the 1 KOhm resistors R186, R191, R192, R194 with 4.7 KOhm resistors. - A failure has been detected of component GD5422 on systems that use the DSM 40091 monitor. The cause has been found to be the imperfect loopback between logic ground and GD5422 ground: attach pin 1 (cathode) of diode D2 to pin 2 of capacitor C50, and add three 0 Ohm resistors in positions 267, 288, 302.	Factory
01/96	02S1		Solved the loss of the DPT board configuration in the power on/power off transistors in a system connected via parallel interface to a printer which is always on. This cause has been detected in the sizing of the pull-up resistors of some of the signals of the subject interface: replace the 1 KOhm resistors R187, R191, R192, R194 with 4.7 KOhm resistors.	Factory
1/96	02S2		New Step-B0 masks for components ESC and PCEB: replace ESC (U26) from step A1/2 to step B0, N.F: GA0Y; replace PCEB (U39) from step A1/2 to step B0, N.F: GA0X. Replacement of phased-out RTC component DS1287 with the alternative RTC DS1287A.	Factory
1/96	02S3		Due to the unavailability of the 85C244-66 type PAL fitted in pos. U45 (GKWA), the alternative GAL22V10 will be used which when programmed becomes WP64.	Factory
3/96	02S4		Problem solved with the TRICOM 3C592 - 3C597 network boards. The system would crash after board configuration due to the delayed generation of the AENx signals. Replace the PAL GKW5 in pos. U23 with PAL WP69 (new program); make four wirings: from U26 pin 120 to U23 pin 11, from U26 pin 119 to U23 pin 12, from U26 pin 118 to U23 pin 1, from U26 pin 117 to U23 pin 8; trim from U23 pin 8 and its path.	Factory

MONOPROCESSOR CPU BOARD GO893/896/2052 (FOR THE SNX 140 66 MHz /140 R)



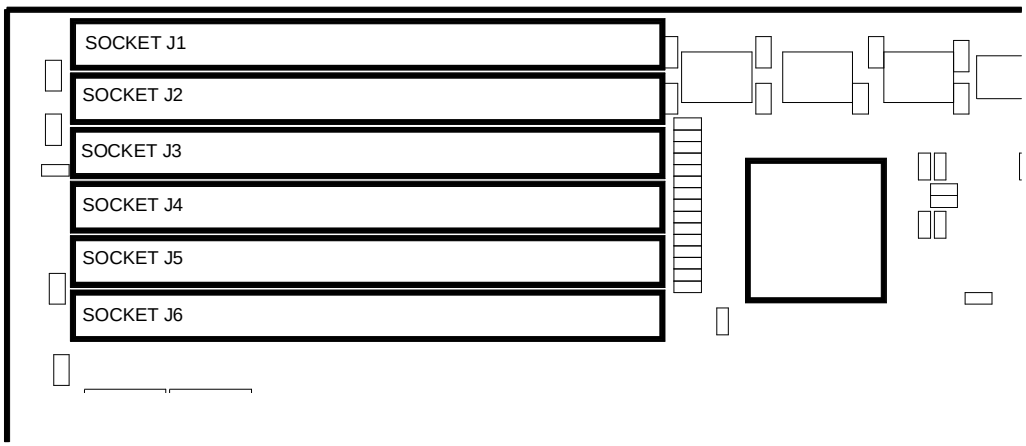
Notes:

- *The Pentium P5 is fitted with a fan which cools it down and which is attached to connector J9. The chipset is cooled down by a fan which is fitted on a bracket and secured to the bottom of the basic module frame, near the chipset itself.*
- *Any additional memory expansion SIMMs are automatically recognized by activating the ECU or the BIOS-resident Setup Utility and therefore without requiring any hardware jumper settings.*
- *The Pentium P5 processor can be optionally replaced by future Intel OverDrive processors.*

DIP-SWITCH BLOCK U25

DIP-SWITCHES U25				DESCRIPTION
1	2	3	4	
ON	OFF	ON	OFF	Enables second level cache memory configuration without parity checking. Always and only use this configuration on Olivetti systems.
OFF	ON	OFF	ON	Enables second level cache memory configuration without parity checking. Not used on Olivetti systems.

MEMORY EXPANSION



Follow the rules listed below to configure the memory on these boards:

- The system sees the memory as being divided into 3 banks (1, 2 and 3). Each bank occupies two sockets on the CPU board. Bank 1: sockets J1 and J4, bank 2: sockets J2 and J5, bank 3: sockets J3 and J6.
- The SIMMs must always be installed in pairs to fill the entire memory bank. Each pair consists of two SIMMs of the same capacity and density.
- SIMMs of different capacities can be installed in the same system, but not in the same memory bank.
- Install the SIMMs starting always from bank 1.
- Double-sided (DS) SIMMs must always be installed before the single-sided (SS) SIMMs, in other words they must be installed in the lower banks (starting from bank 1). When new SIMMs are added, make sure that this rule is followed and, if necessary, move the SS SIMMs into the upper banks and the DS SIMMs into the lower ones.
- Minimum memory configuration is 16 MB, expandible to 192 MB.

The following SIMMs can be used:

PDG NAME	CAP.	MEMORY EXPANSION KIT
EXM 28-004	4 MB	One SD 4 MB 70 ns (1 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 28-008	8 MB	One DD 8 MB 70 ns (2 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 28-008/B	8 MB	One DD 8 MB 70 ns (2 Mbit x 36) 1" H SIMM. 2 kits must be ordered.
EXM 28-016	16 MB	One SD 16 MB 70 ns (4 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 29-032	32 MB	One DD 32 MB 70 ns (8 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 40-032	32 MB	One DD 32 MB 70 ns (8 Mbit x 36) 1" H SIMM. 2 kits must be ordered.

Note: *1" high SIMMs will replace the standard height versions.*

The following table shows some possible memory configuration combinations.

TOTAL MEMORY	BANK 1		BANK 2		BANK 3	
	SOCKET J1	SOCKET J4	SOCKET J2	SOCKET J5	SOCKET J3	SOCKET J6
16 MB	4 MB	4 MB	4 MB	4 MB		
24 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB
32 MB	4 MB	4 MB	4 MB	4 MB	8 MB	8 MB
48 MB	4 MB	4 MB	4 MB	4 MB	16 MB	16 MB
80 MB	4 MB	4 MB	4 MB	4 MB	32 MB	32 MB
24 MB	4 MB	4 MB	8 MB	8 MB		
40 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB
56 MB	4 MB	4 MB	8 MB	8 MB	16 MB	16 MB
88 MB	4 MB	4 MB	8 MB	8 MB	32 MB	32 MB
40 MB	4 MB	4 MB	16 MB	16 MB		
72 MB	4 MB	4 MB	16 MB	16 MB	16 MB	16 MB
104 MB	4 MB	4 MB	16 MB	16 MB	32 MB	32 MB
72 MB	4 MB	4 MB	32 MB	32 MB		
136 MB	4 MB	4 MB	32 MB	32 MB	32 MB	32 MB
16 MB	8 MB	8 MB				
32 MB	8 MB	8 MB	8 MB	8 MB		
48 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB
64 MB	8 MB	8 MB	8 MB	8 MB	16 MB	16 MB

TOTAL MEMORY	BANK 1		BANK 2		BANK 3	
	SOCKET J1	SOCKET J4	SOCKET J2	SOCKET J5	SOCKET J3	SOCKET J6
96 MB	8 MB	8 MB	8 MB	8 MB	32 MB	32 MB
48 MB	8 MB	8 MB	16 MB	16 MB		
80 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB
112 MB	8 MB	8 MB	16 MB	16 MB	32 MB	32 MB
80 MB	8 MB	8 MB	32 MB	32 MB		
144 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB
32 MB	16 MB	16 MB				
64 MB	16 MB	16 MB	16 MB	16 MB		
96 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
128 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB
96 MB	16 MB	16 MB	32 MB	32 MB		
160 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB
64 MB	32 MB	32 MB				
128 MB	32 MB	32 MB	32 MB	32 MB		
192 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB

BOARD GO893 P. 2.0 (P.c.b. Code 498455 W) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
04/94	Nasc	498454 V	New board with a PZD4 BIOS. The first BIOS release is 1.05.1 code 498486N lev. Nasc. The BIOS evolutions are explained further on.	Factory
1st service call	01		Occasional parity errors or system crashes have been detected on a limited number of machines: replace the six 22 Ohm resistors in pos. R6, R7, R8, R9, R10, R11 with 0 Ohm resistors. Since this board is no longer manufactured, this modification is to be made at the first service call so as to correct the above faults.	Field

BOARD GO896 (P.c.b. Code 498483 K) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
10/94	Nasc	498482 J	New board which replaces the GO893 and includes its wirings. This board is introduced with PZD4 BIOS release 1.06 code 498486N lev. 01. The BIOS evolutions are explained further on.	Factory
11/94	01		Cost reduction purposes, since this board does not require a second level cache with parity: 4-pin U25 DIP-switch block and 8 wirings removed, 2 wirings added. Material flow optimization purposes: eliminated the codes for the P5 CPU and the Thermalloy 2325B heatsink.	Factory
03/95	02		The CPU P5 ZIF socket broke during the transportability tests: this Yamaichi socket is replaced with an AMP model.	Factory
1st service call	03		Occasional parity errors or system crashes have been detected on a limited number of machines: replace the six 22 Ohm resistors in pos. R6, R7, R8, R9, R10, R11 with 0 Ohm resistors. Since this board is no longer manufactured, this modification is to be made at the first service call so as to correct the above faults.	Field

BOARD GO2052 (P.c.b. Code 654313 A) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
01/95	Nasc	562180 W	Board introduced to replace the GO896 and recover the wirings. This board is introduced with PZD4 BIOS release 1.07 code 498486N lev. 02. The BIOS evolutions are described further on.	Factory
03/95	01		The CPU P5 ZIF socket broke during the transportability tests: this Yamaichi socket is replaced with an AMP version.	Factory
07/95	02		Occasional parity errors or system crashes have been detected on a limited number of machines: replace the six 22 Ohm resistors in pos. R6, R7, R8, R9, R10, R11 with 0 Ohm resistors.	Factory

PZD4 BIOS EVOLUTION FOR THE GO893, GO896, GO2052

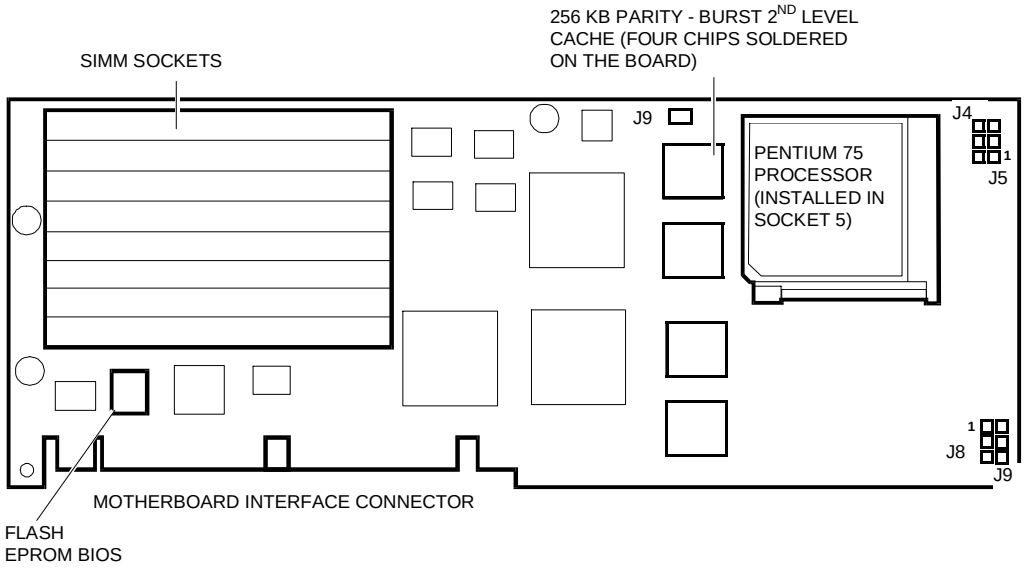
DATE	LEV.	BIOS	CODE	REASON FOR CHANGE
04/94	Nasc	1.05.1 PZD4	498486N	New PZD4 BIOS with the following limitations: - Does not support the remote terminal feature (it is not possible to enter characters at the DOS prompt from the remote terminal, and it does not work at 19200 baud) - System crash at the POD if the AT8/16 is mapped at FCC00:0 - The MUX_DIA diagnostic is unable to recognize the board mapped at F6400:0 - The ALC_DIA rel 1.5 diagnostic randomly signals error conditions.
04/94	Nasc	1.05.2 PZD4		New BIOS for NetFRAME only. Corrects the problem with the remote terminal. The code does not change level.
07/94	01	1.06 PZD4		New BIOS which: - includes PCI Automatic Configuration 1.1U - enables parity checking for asynchronous second level cache - solves the remote terminal problem in DOS FDISK.
11/94	02	1.07 PZD4		New BIOS which: - includes a BIOS release also compatible for the SNX 140/R - has a Built-In Setup that allows the interrupt of the Arrow controller to be shared - supports the PCI Dagger board - corrects the enabling of the IRQ14 interrupt on PCI - excludes the IRQ9 from the list of interrupts for the PCI Dagger board.
04/95	03	1.09 PZD4		BIOS replaced for the following reasons: - The scan sequence at bootstrap of the EISA slots (from slot 3 to 7) and PCI slots (from slot 1 to 3) is inverted - Dagger controller support in multiple configurations - Corrected the error message which appears with 512 KB of basic memory - New default value for the Features Bit: EISA to PCI line buffer = enabled, CPU to memory write posting = disabled - ROM Setup support for resilience versions (with DPT RAID controller) - Integrates ACFG release 1.21 - Modification made to the ROM Setup so that the Start Unit command is always sent to the SCSI devices and to eliminate the tri-state serial port interrupt bit.

DATE	LEV.	BIOS	CODE	REASON FOR CHANGE
12/95	04	1.11 PZD4	498486N	BIOS replaced to: - Solve the malfunction under NT 3.51 which signalled "PCI TARGET ABORT ERROR" when rebooting after a shutdown. The address space between 0FFFC0000h and 0C0000000h and I/O addresses between 0FFFFh and 0F000h are no longer available for PCI boards since conflicts are generated under NT 3.51. The address space is now allocated above the 3rd GB for the buffers, and below 0EFFFh for the I/O ports. - Avoid the serial test when "embedded special serial port" is enabled for the support of the PNS5162 feature.
1/96	05	1.12 PZD4		BIOS replaced to solve the problems with OS2 and Dagger controllers with an I/O area mapped at z805h.

Note: *For the Pentium P5 step B or C processor, bear in mind that:*
- *A heatsink and a fan secured with a clip (IERC or Thermalloy) are required.*
- *The use of a silicon-based grease is suggested to improve margins.*
- *The use of a dual-adhesive strip at 35 degrees Centigrade pushes the Pentium's environmental temperature values to the maximum specifications.*

Note: *Given the occasional failures of the floppy disk drive during the specific system test procedures, from June 1995 a toroidal ferrite code 5415309V is added to the power cord code 5442071F of the axial fan used to cool down the chip set. Assemble as follows: wind the fan power cord three times around the toroid and then place the toroid near the floppy drive.*

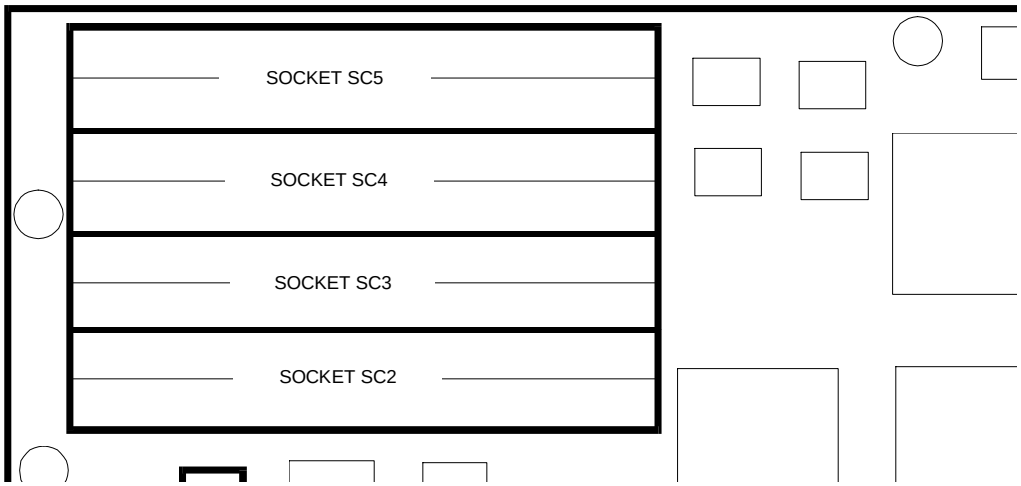
MONOPROCESSOR CPU BOARD GO2076 (FOR THE SNX 140 75 MHz)



Notes:

- *A passive heatsink (without fan) fitted on the processor is sufficient to cool down the processor and therefore connector J1 for the connection of the fan of the active heatsink is not used.*
  On the SNX 140 75 there is no longer need to cool the chipset using the fan and related bracket, so the toroidal ferrite code 5415309 V is also removed.
  The fan assembly will have to be refitted in case this system is upgraded with CPUs different than the ones that the system was issued with (75 MHz).
- *Any added memory expansion SIMMs are automatically recognized by activating the ECU or the BIOS Setup Utility and therefore without requiring any hardware jumper setting.*
- *The Pentium 75 can be optionally replaced by future Intel OverDrive processors.*
- *Deriving from the dualprocessor GO2063, this board uses the Neptune chipset and its BIOS is an evolution of the GO2063's BIOS. The Mercury chipset used on the earlier boards is therefore no longer manufactured.*
- *With respect to the GO2063, the DC/DC converter circuits for power supply to the VRE processors have been removed from the GO2076. The related jumpers J4, J5, J8 and J9 are, however, still present and must always be set to position 2-3.*
  The Pentium 75 processor or any replacement OverDrive are therefore always powered with the standard +3.3 V mode.

MEMORY EXPANSION



Follow the rules below to configure memory using parity and ECC SIMMs:

- It is usually not advised to have mixed configurations of parity and ECC SIMMs on the same board, even though possible. This is because ECC protection over the data in memory would only be partial. It is therefore suggested to use only parity SIMM or ECC SIMM configurations.
- The system sees memory as being divided into four banks (1, 2, 3 and 4). Each bank occupies two sockets on the CPU board. Bank 1: double socket SC2, bank 2: double socket SC3, bank 3: double socket SC4, bank 4: double socket SC5.
- The SIMMs must always be installed in pairs to complete a memory bank. Each pair consists of two SIMMs of the same capacity and density.
- SIMMs of different capacities can be installed in the same system, but not in the same memory bank.
- Install the SIMMs always starting from bank 1.
- Double-sided (DS) SIMMs must always be installed before the single-sided (SS) SIMMs, in other words they must be installed in the lower banks (starting from bank 1). When new SIMMs are added, make sure that this rule is followed and, if necessary, move the SS SIMMs into the upper banks and the DS SIMMs into the lower ones.
- If the system is equipped with parity SIMMs, the minimum memory capacity is 16 MB expandible to 256 MB; if the system is equipped with ECC SIMMs, the minimum memory capacity is 32 MB expandible to 128 MB.

The following parity SIMMs are to be used:

PDG NAME	CAP.	MEMORY EXPANSION KIT
EXM 28-008	8 MB	One DS 8 MB 70 ns (2 Mbit x 36) SIMM. Two kits must be ordered.
EXM 28-008/B	8 MB	One DS 8 MB 70 ns (2 Mbit x 36) 1" H SIMM. Two kits must be ordered.
EXM 28-016	16 MB	One SS 16 MB 70 ns (4 Mbit x 36) SIMM. Two kits must be ordered.
EXM 29-032	32 MB	One DS 32 MB 70 ns (8 Mbit x 36) SIMM. Two kits must be ordered.
EXM 40-032	32 MB	One DS 32 MB 70 ns (8 Mbit x 36) 1" H SIMM. Two kits must be ordered.

Note: *4 MB SIMMs are no longer produced.*

Note: *1" SIMMs will replace the standard height versions.*

The table below shows possible memory configurations when using parity SIMMs.

TOTAL MEMORY	BANK 1		BANK 2		BANK 3		BANK 4	
	SOCKET SC2		SOCKET SC3		SOCKET SC4		SOCKET SC5	
16 MB	8 MB	8 MB						
32 MB	8 MB	8 MB	8 MB	8 MB				
48 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB		
64 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB
80 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	16 MB	16 MB
112 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	32 MB	32 MB
48 MB	8 MB	8 MB	16 MB	16 MB				
80 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB		
112 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
144 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB
80 MB	8 MB	8 MB	32 MB	32 MB				
144 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB		
208 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
32 MB	16 MB	16 MB						
64 MB	16 MB	16 MB	16 MB	16 MB				
96 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB		
128 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
160 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB
96 MB	16 MB	16 MB	32 MB	32 MB				
160 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB		
224 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
64 MB	32 MB	32 MB						
128 MB	32 MB	32 MB	32 MB	32 MB				
192 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB		
256 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB

The following ECC SIMMs are to be used:

PDG NAME	CAPACITY	MEMORY EXPANSION KIT
EXM ECC032	32 MB	Two 16 MB ECC (4 Mbit x 36) 70 ns

Note: *For mechanical reasons, Kit EXM ECC064 with 32 MB SIMMs cannot be used on Iron box systems.*

Note: *The new generation of IBM SIMMs with ECC are called ECC-On-SIMMs since the ECC is integrated on the SIMM and provides complete Single Error Correct (SEC) and Error Correcting Code (ECC) functions.*

The following table lists possible memory configurations when using ECC SIMMs.

TOTAL MEMORY	BANK 1		BANK 2		BANK 3		BANK 4	
	SOCKET SC2		SOCKET SC3		SOCKET C4		SOCKET SC5	
32 MB	16 MB	16 MB						
64 MB	16 MB	16 MB	16 MB	16 MB				
96 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB		
128 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB

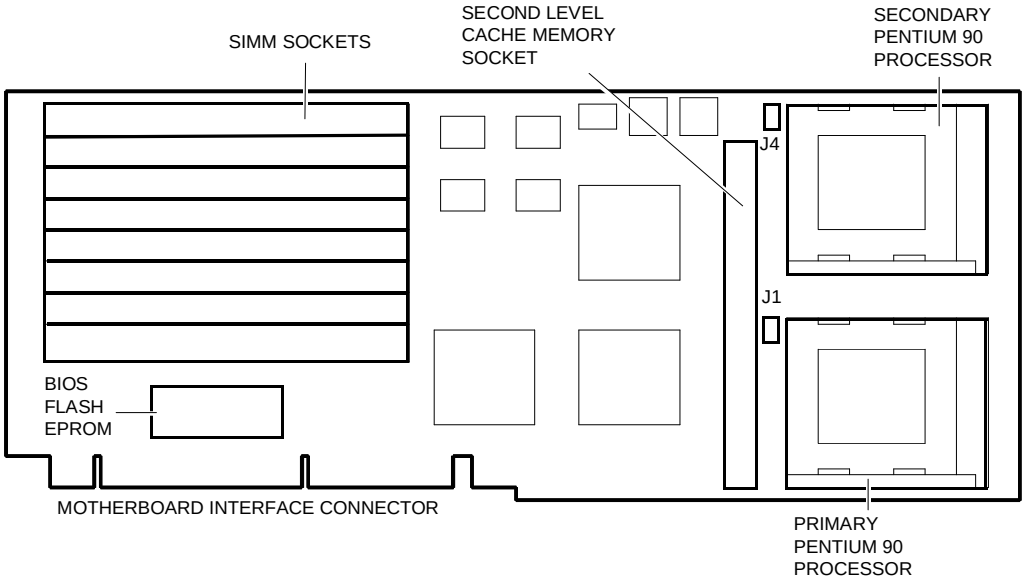
EVOLUTION OF BOARD GO2076 (P.c.b. Code 654348 V)

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
01/96	Nasc	210884 E	New board with Neptune chipset for the SNX 140 75. The compatible BIOS is labelled WE12. The first BIOS release is 2.02 code 562382U lev. 02. The BIOS evolutions are described further on.	Factory

EVOLUTION OF BOARD GO2123 (P.c.b. Code 210914 U)

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
03/96	Nasc	210914 U	New board as an alternative to the GO2076 for process quality improvements (purchasing, assembly). New printed circuit, 3.3 V cache. The compatible BIOS is labelled WE12. The first BIOS release is 2.02 code 562382U lev. 02. The BIOS evolutions are described further on.	Factory

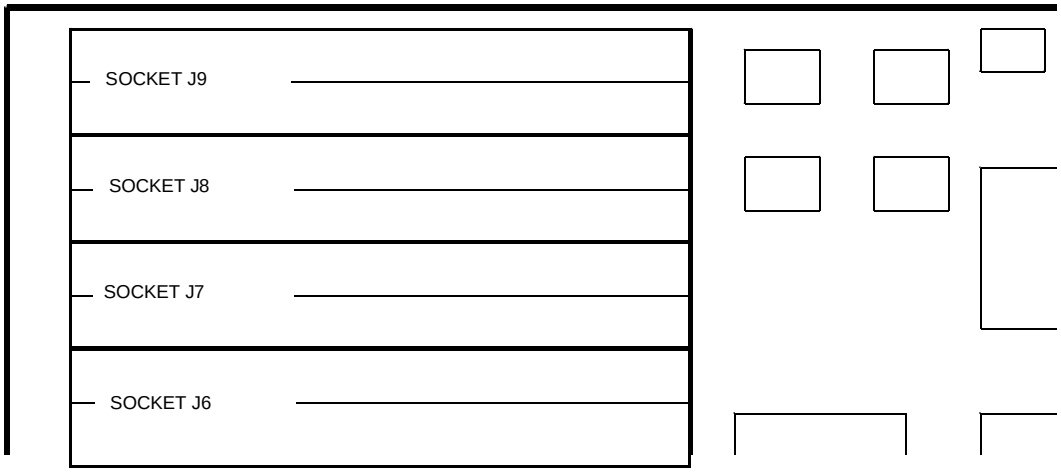
DUALPROCESSOR CPU BOARD GO898/2060/2082 FOR THE SNX 160 / 160/R SYSTEMA



Notes:

- *Since a processor-fitted passive heatsink (without fan) is fully capable of cooling the processors, socket J1 and J4 which connect the fans of the active heatsinks are not used.*
  The chipset is cooled down by a fan which is fitted on a bracket and secured to the bottom of the basic module frame, near the chipset itself.
- *There are no jumper settings to be made on the board: additional memory expansion SIMMs are automatically recognized by the system through the activation of the ECU or the BIOS Setup Utility.*
- *The Pentium 90 processors are powered with 3.3 V. Systems which configure this board, therefore, must be equipped with a power supply capable of providing 3.3 V required for processor operation.*
- *First series 90 MHz Pentium processors, before step B5, which are installed on this board differed slightly from the primary processor called P54C and the secondary processor called P54CM and therefore could not exchange positions. From step B5 onwards, the 90 MHz Pentium processor is identical in both primary and secondary versions; the different functions that these processors carry out on the board is determined by the position of the socket in which the processor is installed.*
- *The primary processor can be optionally replaced by future Intel OverDrive processors.*

MEMORY EXPANSION



Listed below are the rules for configuring system memory using parity and ECC SIMMs:

- As a general rule it is unadvised, even though possible, to mix parity and ECC SIMM configurations on the same board since the data in memory would only be partly protected with ECC protection. It is therefore suggested to only use parity SIMM or ECC SIMM configurations.
- The system sees the memory as being divided into 4 banks (1, 2, 3 and 4). Each bank occupies two sockets on the CPU board. Bank 1: dual socket J6, bank 2: dual socket J7, bank 3: dual socket J8, bank 4: dual socket J9.
- The SIMMs must always be installed in pairs to fill the entire memory bank. Each pair consists of two SIMMs of the same capacity and density.
- SIMMs of different capacities can be installed in the same system, but not in the same memory bank.
- Install the SIMMs starting always from bank 1.
- Double-sided (DS) SIMMs must always be installed before the single-sided (SS) SIMMs, in other words they must be installed in the lower banks (starting from bank 1). When new SIMMs are added, make sure that this rule is followed and, if necessary, move the SS SIMMs into the upper banks and the DS SIMMs into the lower ones.
- If the system is configured with parity SIMMs, the minimum system memory capacity is 16 MB expandible to 256 MB. If ECC SIMMs are used instead, the minimum system memory capacity is 32 MB expandible to 128 MB.

The following SIMMs can be used:

PDG NAME	CAP.	MEMORY EXPANSION KIT
EXM 28-004	4 MB	One SD 4 MB 70 ns (1 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 28-008	8 MB	One DD 8 MB 70 ns (2 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 28-008/B	8 MB	One DD 8 MB 70 ns (2 Mbit x 36) 1" H SIMM. 2 kits must be ordered.
EXM 28-016	16 MB	One SD 16 MB 70 ns (4 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 29-032	32 MB	One DD 32 MB 70 ns (8 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 40-032	32 MB	One DD 32 MB 70 ns (8 Mbit x 36) 1" H SIMM. 2 kits must be ordered.

Note: *1" high SIMMs will replace the standard height versions.*

The following table shows some possible memory configuration combinations using parity SIMMs.

TOTAL MEMORY	BANK 1		BANK 2		BANK 3		BANK 4	
	SOCKET J6		SOCKET J7		SOCKET J8		SOCKET J9	
16 MB	4 MB	4 MB	4 MB	4 MB				
24 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB		
32 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB
40 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	8 MB	8 MB
56 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	16 MB	16 MB
88 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	32 MB	32 MB
24 MB	4 MB	4 MB	8 MB	8 MB				
40 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB		
56 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB
72 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB	16 MB	16 MB
104 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB	32 MB	32 MB
40 MB	4 MB	4 MB	16 MB	16 MB				
72 MB	4 MB	4 MB	16 MB	16 MB	16 MB	16 MB		
104 MB	4 MB	4 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
136 MB	4 MB	4 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB
72 MB	4 MB	4 MB	32 MB	32 MB				
136 MB	4 MB	4 MB	32 MB	32 MB	32 MB	32 MB		
200 MB	4 MB	4 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
16 MB	8 MB	8 MB						
32 MB	8 MB	8 MB	8 MB	8 MB				
48 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB		
64 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB
80 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	16 MB	16 MB
112 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	32 MB	32 MB
48 MB	8 MB	8 MB	16 MB	16 MB				
80 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB		
112 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
144 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB
80 MB	8 MB	8 MB	32 MB	32 MB				
144 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB		
208 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
32 MB	16 MB	16 MB						
64 MB	16 MB	16 MB	16 MB	16 MB				
96 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB		
128 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
160 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB
96 MB	16 MB	16 MB	32 MB	32 MB				
160 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB		
224 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
64 MB	32 MB	32 MB						

TOTAL MEMORY	BANK 1		BANK 2		BANK 3		BANK 4	
	SOCKET J6		SOCKET J7		SOCKET J8		SOCKET J9	
128 MB	32 MB	32 MB	32 MB	32 MB				
192 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB		
256 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB

The following ECC SIMMs can be used:

PDG NAME	CAPACITY	MEMORY EXPANSION KIT
EXM ECC032	32 MB	Two 16 MB (4 Mbit x 36) 70 ns ECC SIMMs

Note: *For mechanical purposes, the EXM ECC064 kit equipped with 32 MB SIMMs cannot be used on Iron box case systems.*

Note: *The new generation IBM SIMMs with ECC checking are called ECC On-SIMMs since the ECC function is integrated in the SIMM itself and provides complete Single Error Correct (SEC) and Error Correcting Code (ECC) functions.*

The following table shows some possible memory configuration combinations using ECC SIMMS.

TOTAL MEMORY	BANK 1		BANK 2		BANK 3		BANK 4	
	SOCKET J6		SOCKET J7		SOCKET J8		SOCKET J9	
32 MB	16 MB	16 MB						
64 MB	16 MB	16 MB	16 MB	16 MB				
96 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB		
128 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB

BOARD GO898 (P.c.b. Code 498497 R) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
08/94	Nasc	498496 Q	New board for the SNX 160, 160/R. The compatible BIOS is labelled PZD5. The first BIOS release is 1.02 code 498458 H lev. Nasc. The BIOS evolutions are described further on.	Factory
09/94	01		Cost reduction: replace the fan heatsink for the P54C/CM with a heatsink without fan.	Factory
11/94	02		Material flow optimization: the codes of the P54C-90 CPU and Thermalloy heatsink have been eliminated.	Factory
01/95	02		The Intel P54CM and P54C step B1 processors have been replaced by the 60/90 MHz P54C step B5; the code of the board does not change in level since the processor and board are managed separately (see lev. 02).	Factory
04/95	02		60/90 P54C CPU step B5 replaced with the 60/90 P54C step C2 CPU. The board code does not change in level since the processor and board are managed separately (see lev. 02).	Factory
1st service call	03		Occasional parity errors or system crashes have been detected on a limited number of machines: replace the eight 22 Ohm resistors in pos. R107, R108, R109, R110, R111, R112, R113, F114 with 0 Ohm resistors. Since this board is no longer manufactured, this modification is to be made at the first service call so as to correct the above faults.	Field

BOARD GO2060 (P.c.b. Code 654325 E) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
01/95	Nasc	562220 D	New board that replaces the GO898 and includes its wirings. The compatible BIOS is labelled PZD5. The first BIOS release is 1.02 code 498458 H lev. Nasc. The BIOS evolutions are described further on.	Factory
04/95	Nasc		60/90 P54C CPU step B5 replaced with the 60/90 P54C step C2 CPU. The board code does not change in level since the processor and board are managed separately.	Factory
05/95	01		Occasional parity errors or system crashes have been detected on a limited number of machines: replace the 74F244 components in positions U1, U3, U6 (side A) and U7, U5, U4 (side B), with 74AC244 components.	Factory
07/95	02		Occasional parity errors or system crashes have been detected on a limited number of machines: replace the eight 22 Ohm resistors in pos. R107, R108, R109, R110, R111, R112, R113, F114 with 0 Ohm resistors. Replace the 74AC244 components in positions U1, U3, U4, U5, U6, U7, with the 74F244 components.	Factory

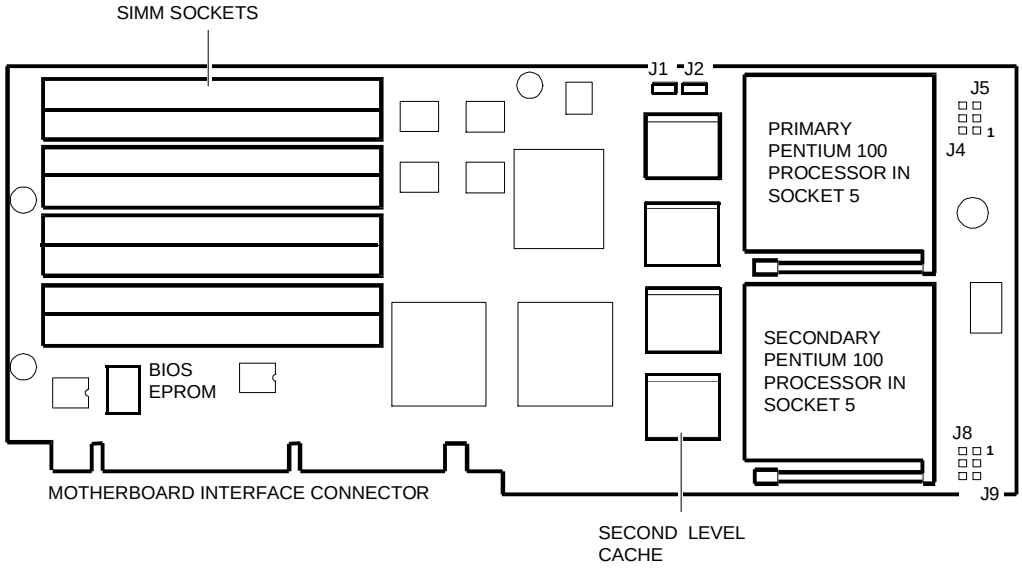
BOARD GO2082 (P.c.b. Code 654348 V) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
12/95	Nasc	210735 G	New board that replaces the GO2060 and includes its wirings. The compatible BIOS is labelled PZD5. The first BIOS release is 1.09 code 498458 H lev. 01AG. The BIOS evolutions are described further on.	Factory

PZD5 BIOS EVOLUTION FOR THE GO898, GO2060, GO2082

DATE	LEV.	BIOS	VIMO CODE	REASON FOR CHANGE
08/94	Nasc	1.02 PZD5	498458 H	New PZD5 BIOS.
04/95	01	1.07 PZD5		BIOS replaced for the following reasons: - The scan sequence at bootstrap of the EISAslots (from slot 3 to 7) and of the PCI slots (from slot 1 to 3), is inverted - Dagger controller support in multiple configurations - Solved the problem with the system hanging during shutdown with single-processor CPU boards and Windows NT - Corrected the error message which appeared with 512 KB of basic memory - New default value for the Features Bit: CPU to memory write posting = enabled. - ROM Setup support for resilience versions (with DPT RAID controller) - Integrates ACFG release 1.21 - Modification made to the ROM Setup so that the Start Unit command is always sent to the SCSI devices and to eliminate the tri-state serial port interrupt bit - Pipeline enabled for dual-processor versions where both CPUs have a step ID => than B5.
06/95	01AG	1.09 PZD5		BIOS replaced for the following reasons: - Support for the 100 MHz CPU board on the SNX 160/RS and 160E - Complete support for PCI ACFG version 1.21U. - To be able to support PNS5162, the serial test is eliminated when "Embedded special serial port" is enabled.
01/96	03	2.02 PZD5		BIOS replaced to: - Support the following systems that are based on the Neptune chipset: SNX 160 - 66/100 MHz, SNX 160 - 60/90 MHz, SNX 160 - 66/133 MHz, SNX 140 - 50/75 MHz. - Solve the malfunction under NT 3.51 which signalled "PCI TARGET ABORT ERROR" when rebooting after a shutdown. The memory resources for PCI devices have been invalidated within the 0FFFC0000h to 0C0000000h address range and I/O resources within the 0FFFFh and 0F000h address range. The address space is now allocated under 3 GB for the buffers and under 0EFFFh for the I/O ports. - Solve the problem with OS/2 and Dagger controllers with an I/O space mapped at z805h. - Solve configuration problems with some LAN boards.
05/96	04	2.03 PZD5		BIOS replacement to: - Enable the 0-Active RAS Mode when memory configuration is obtained by using more than four SIMMs; otherwise the 0-Active RAS Mode is disabled.

DUALPROCESSOR CPU BOARD GO2063 FOR THE SNX 160E SYSTEMA



Notes:

- *Since a processor-fitted passive heatsink (without fan) is fully capable of cooling the processors, connectors J1 and J2 which connect the fans of the heatsinks are not used.*
  The chipset is cooled down by a fan which is fitted on a bracket and secured to the bottom of the basic module frame, near the chipset itself.
- *There are no jumper settings to be made on the board: additional memory expansion SIMMs are automatically recognized by the system through the activation of the ECU or the BIOS Setup Utility.*
- *The primary processor can be optionally replaced by future Intel OverDrive processors.*

PROCESSOR POWER SUPPLY VOLTAGE SELECTION JUMPER

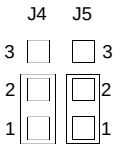
This board is set to host processors operating in either the VRE or Standard modes. Processors operating in the VRE mode require a +3.45 V power supply while those operating the Standard mode require +3.3 V. A DC/DC Converter circuitry and jumper block for each of the two processors are fitted on the CPU board so that the specific power supply for each processor can be selected. This enables a single board to host two processors operating in different modes. The +3.3 V are supplied by the power supply, while the +3.45 V are taken directly from the +5 V by the DC/DC Converter.

Listed below are the Pentium 100 processors (primary or secondary) operating in the VRE or Standard modes:

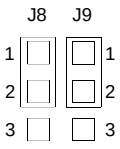
- Pentium 100 step B5 VRE (identifier marked on the chip: 100 SX970).
- Pentium 100 step C2 VRE (identifier marked on the chip: 100 SX962).
- Pentium 100 step C2 Standard (identifier marked on the chip: 100 SX963).

The above processors are always jumpered for the VRE mode of operation since standard voltage step C2 can work within the limits of the VRE voltage (3.135 V - 3.6 V). The OverDrive processors currently in use, however, can only work in the Standard mode. The next tables show the different jumper settings.

VOLTAGE SELECTION FOR THE PRIMARY PROCESSOR			
MODE	**PROCESSOR**	**JUMPER J4**	**JUMPER J5**
VRE (+3.45 V)	All Pentium 100 processors	Pins 1-2	Pins 1-2
STD (+3.3 V)	OverDrive Processor	Pins 2-3	Pins 2-3

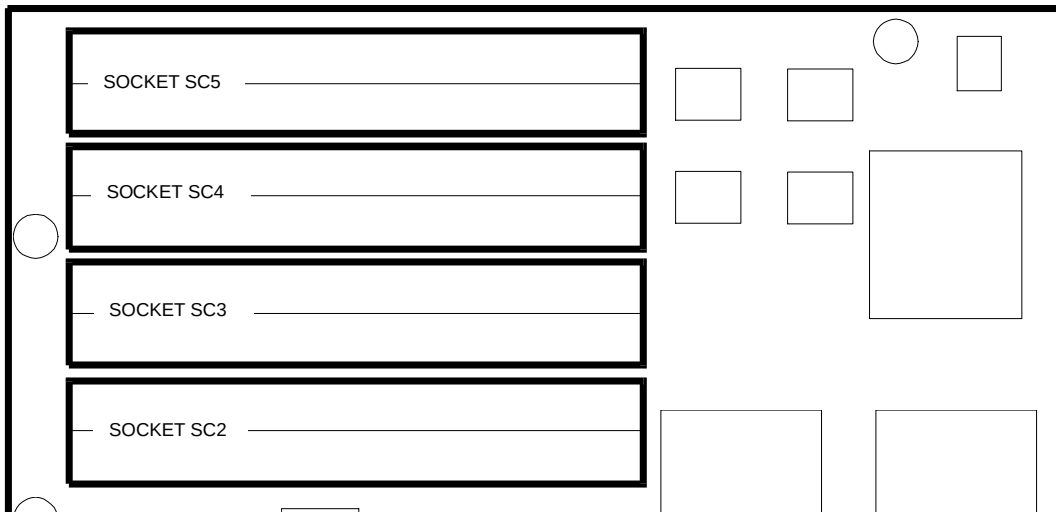


VOLTAGE SELECTION FOR THE SECONDARY PROCESSOR			
MODE	**PROCESSOR**	**JUMPER J8**	**JUMPER J9**
VRE (+3.45 V)	All Pentium 100 processors	Pins 1-2	Pins 1-2
STD (+3.3 V)	Not used	Pins 2-3	Pins 2-3



Note: *Even though the second processor is not fitted jumpers J8 and J9 must still be inserted and configured as jumpers J4 and J5.*

MEMORY EXPANSION



Listed below are the rules for configuring system memory using parity and ECC SIMMs:

- As a general rule it is unadvised, even though possible, to mix parity and ECC SIMM configurations on the same board since the data in memory would only be partly protected with ECC protection. It is therefore suggested to only use parity SIMM or ECC SIMM configurations.
- The system sees the memory as being divided into 4 banks (1, 2, 3 and 4). Each bank occupies two sockets on the CPU board. Bank 1: dual socket SC2, bank 2: dual socket SC3, bank 3: dual socket SC4, bank 4: dual socket SC5.
- SIMMs must always be installed in pairs to fill the entire memory bank. Each pair consists of two SIMMs of the same capacity and density.
- SIMMs of different capacities can be installed in the same system, but not in the same memory bank.
- Install the SIMMs starting always from bank 1.
- Double-sided (DS) SIMMs must always be installed before the single-sided (SS) SIMMs, in other words they must be installed in the lower banks (starting from bank 1). When new SIMMs are added, make sure that this rule is followed and, if necessary, move the SS SIMMs into the upper banks and the DS SIMMs into the lower ones.

- If the system is configured with parity SIMMs, the minimum system memory capacity is 16 MB expandible to 256 MB. If ECC SIMMs are used instead, the minimum system memory capacity is 32 MB expandible to 128 MB.

The following SIMMs can be used:

PDG NAME	CAP.	MEMORY EXPANSION KIT
EXM 28-004	4 MB	One SD 4 MB 70 ns (1 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 28-008	8 MB	One DD 8 MB 70 ns (2 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 28-008/B	8 MB	One DD 8 MB 70 ns (2 Mbit x 36) 1" H SIMM. 2 kits must be ordered.
EXM 28-016	16 MB	One SD 16 MB 70 ns (4 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 29-032	32 MB	One DD 32 MB 70 ns (8 Mbit x 36) SIMM. 2 kits must be ordered.
EXM 40-032	32 MB	One DD 32 MB 70 ns (8 Mbit x 36) 1" H SIMM. 2 kits must be ordered.

Note: *1" high SIMMs will replace the standard height versions.*

The following table shows some possible memory configuration combinations using parity SIMMs.

TOTAL MEMORY	BANK 1		BANK 2		BANK 3		BANK 4	
	SOCKET SC2		SOCKET SC3		SOCKET SC4		SOCKET SC5	
16 MB	4 MB	4 MB	4 MB	4 MB				
24 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB		
32 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB
40 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	8 MB	8 MB
56 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	16 MB	16 MB
88 MB	4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	32 MB	32 MB
24 MB	4 MB	4 MB	8 MB	8 MB				
40 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB		
56 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB
72 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB	16 MB	16 MB
104 MB	4 MB	4 MB	8 MB	8 MB	8 MB	8 MB	32 MB	32 MB
40 MB	4 MB	4 MB	16 MB	16 MB				
72 MB	4 MB	4 MB	16 MB	16 MB	16 MB	16 MB		
104 MB	4 MB	4 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
136 MB	4 MB	4 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB
72 MB	4 MB	4 MB	32 MB	32 MB				
136 MB	4 MB	4 MB	32 MB	32 MB	32 MB	32 MB		
200 MB	4 MB	4 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
16 MB	8 MB	8 MB						
32 MB	8 MB	8 MB	8 MB	8 MB				
48 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB		
64 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB
80 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	16 MB	16 MB
112 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	32 MB	32 MB
48 MB	8 MB	8 MB	16 MB	16 MB				
80 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB		
112 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
144 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB

TOTAL MEMORY	BANK 1		BANK 2		BANK 3		BANK 4	
	SOCKET SC2		SOCKET SC3		SOCKET SC4		SOCKET SC5	
80 MB	8 MB	8 MB	32 MB	32 MB				
144 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB		
208 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
32 MB	16 MB	16 MB						
64 MB	16 MB	16 MB	16 MB	16 MB				
96 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB		
128 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB
160 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	32 MB	32 MB
96 MB	16 MB	16 MB	32 MB	32 MB				
160 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB		
224 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
64 MB	32 MB	32 MB						
128 MB	32 MB	32 MB	32 MB	32 MB				
192 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB		
256 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB

The following ECC SIMMs can be used:

PDG NAME	CAPACITY	MEMORY EXPANSION KIT
EXM ECC032	32 MB	Two 16 MB (4 Mbit x 36) 70 ns ECC SIMMs

Note: *For mechanical purposes, the EXM ECC064 kit equipped with 32 MB SIMMs cannot be used on Iron box case systems.*

Note: *The new generation IBM SIMMs with ECC checking are called ECC On-SIMMs since the ECC function is integrated in the SIMM itself and provides complete Single Error Correct (SEC) and Error Correcting Code (ECC) functions.*

The following table shows some possible memory configuration combinations using ECC SIMMs.

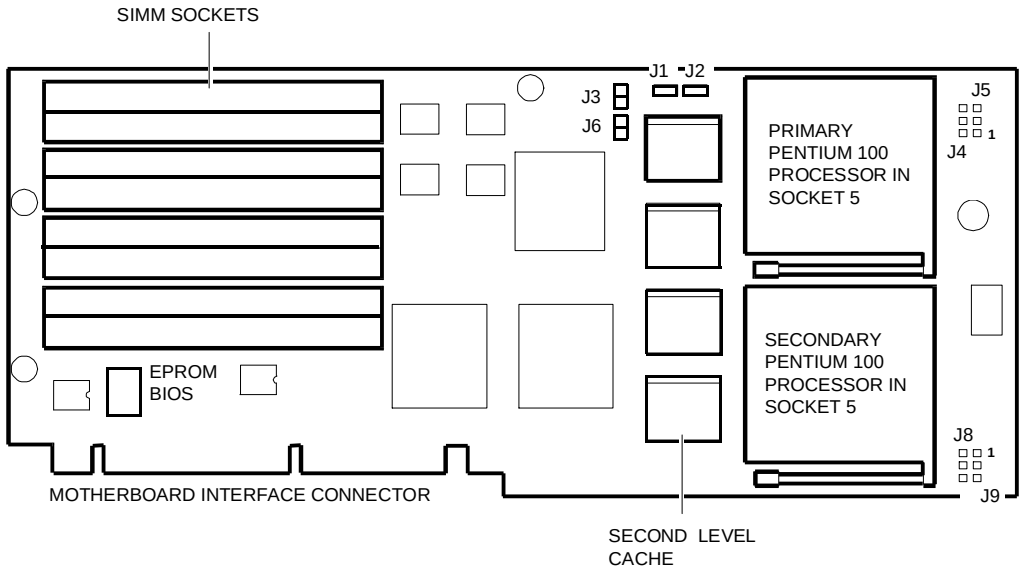
TOTAL MEMORY	BANK 1		BANK 2		BANK 3		BANK 4	
	SOCKET SC2		SOCKET SC3		SOCKET SC4		SOCKET SC5	
32 MB	16 MB	16 MB						
64 MB	16 MB	16 MB	16 MB	16 MB				
96 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB		
128 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB

BOARD GO2063 (P.c.b. Code 654348 V) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
5/95	Nasc	562262 B	New board. The compatible BIOS is labelled WE12. The first BIOS release is 1.08 code 562382 U lev. Nasc. The BIOS evolutions are described further on.	Factory
9/95	01		Cost reduction: replace the components 74AC244 in pos. U2, U3, U4, U5, U8, U9 with 74F244 components; remove resistors R32, R33, R35, R61, R62, R63; remove the component 74AC244 in pos. U13 and the component DS1620 (digital thermometer) in pos. TH1.	Factory
12/95	02		Improved board functional margins in view of the new Intel masks for the P54C processor: replace the 12 6.3 V 100 uF capacitors C26-C32-C33-C40-C59 -C65-C182-C191-C194-C202-C218-C229 with 220 uF 10 V capacitors; replace the 220 uF 10 V radial capacitor C81 with a 2200 uF 10 V capacitor.	Factory

Note: *From September 1995, the 66/100 MHz P54C - step C2 - VRE (3.45-3.6 V) code 4893151U CPU has been replaced by the 66/100 MHz P54C - Step C2 - STD (3.1-3.6 V) code 4893113G CPU on the SNX 160E.*

DUALPROCESSOR CPU BOARD GO2079-100 FOR THE SNX 160E SYSTEMA



Notes:

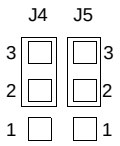
- *Board GO2079 can use Pentium 100 or Pentium 133 processors and its name does not change. To distinguish between these two versions in this guide, the names GO2079-100 and GO2079-133 are used. On the SNX 160E can only be equipped with the GO2079-100 which is fitted with 100 MHz Pentium 100 processors.*
- *To cool down the processors it is sufficient that a passive heatsink (without fan) higher than the one for the Pentium 100 (25 mm instead of 16 mm) be fitted on the chip. Active heatsink connectors J1 and J2 are therefore not used.*
- *There are no jumper settings to be made on the board: additional memory expansion SIMMs are automatically recognized by the system through the activation of the ECU or the BIOS Setup Utility.*
- *The primary processor can be optionally replaced by future Intel OverDrive processors.*

PROCESSOR POWER SUPPLY VOLTAGE SELECTION JUMPER

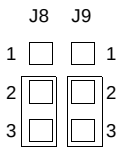
This board is set to host processors operating in either the VRE or Standard modes. Processors operating in the VRE mode require a +3.45 V power supply while those operating the Standard mode require +3.3 V. A DC/DC Converter circuitry and jumper block for each of the two processors are fitted on the CPU board so that the specific power supply for each processor can be selected. This enables a single board to host two processors operating in different modes. The +3.3 V are supplied by the power supply, while the +3.45 V are drawn directly from the +5 V by the DC/DC Converter.

The Pentium 100 processors currently in use work in the standard mode and their jumper settings are indicated in the following table.

VOLTAGE SELECTION FOR THE PRIMARY PROCESSOR			
MODE	**PROCESSOR**	**JUMPER J4**	**JUMPER J5**
VRE (+3.45 V)	Currently not used	Pins 1-2	Pins 1-2
STD (+3.3 V)	All current Pentium 100 and OverDrives	Pins 2-3	Pins 2-3



VOLTAGE SELECTION FOR THE SECONDARY PROCESSOR			
MODE	**PROCESSOR**	**JUMPER J8**	**JUMPER J9**
VRE (+3.45 V)	Not used	Pins 1-2	Pins 1-2
STD (+3.3 V)	All Pentium 100 processors	Pins 2-3	Pins 2-3



Note: *Even though the second processor is not installed, the jumpers must be inserted on J8 and J9 and must be set as on J4 and J5.*

Note: *All the processor VRE selection DC/DC converter circuits have been removed from board GO2079 Lev. 01 since Standard type processors are compatible. The related selection jumpers remain and their setting does not change: J4, J5 and J8, J9 on pins 2-3 (STD 3.3V).*

PROCESSOR CLOCK SELECTION JUMPERS

On this board there is also the possibility of selecting a 2/3, 1/2 and 2/5 ratio between the bus and core clocks of the primary and secondary processors. With this feature it is possible to define the clocks of the processors and to therefore adapt the board to the type of processor installed. Selection is made by means of the two 2-pin jumpers J3 and J6.

JUMPER J3	JUMPER J6	BUS/CORE RATIO	PROCESSOR CLOCK
IN	IN	2/5	166 MHz
OUT	IN	1/2	133 MHz (For the GO2079-133 - not used on the SNX 160E)
OUT	OUT	2/3	100 MHz (For the GO2079-100 - setting to be used)
IN	OUT	-	Reserved

Note: *It is important to correctly set these jumpers otherwise the processor rates differ (for example, the Pentium 133 with jumpers set for 100 MHz will have a clock reduced to 100 MHz, while setting a clock which is higher than the processor's specified value will make the processor work beyond its own specifications). The jumpers are factory set and their setting must not be changed.*
The secondary processor must be identical to the primary processor; configurations with processors working at different speeds are not allowed.

MEMORY EXPANSION

The SIMM sockets, their location, the supported SIMMs (standard and ECC), the memory configuration rules and table of possible combinations are identical to those described for the GO2063 board so refer to the related section for information.

Note: *4 MB SIMMs are no longer being manufactured.*

BOARD GO2079 (P.c.b. Code 654431 Z) EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
Out of stock (1/96)	Nasc	210710 K	New GO2079-100 CPU board with a 100 MHz Pentium 100 processor that replaces the GO2063 for process quality improvements. The compatible BIOS is labelled WE12. The first BIOS release is 2.02 code 562382 U lev. 02. The BIOS evolutions are described further on.	Factory
2/96	01		Elimination of the components of the DC/DC converter that generates the processor VRE supply. The board is only jumpered in the STD mode (3.3 V). The following components are to be removed: TF9433 (U14-16), LTC1148 (U15), C120, C195, C49, L1, C147, C148, R68, R103, R60, R81, TF9410 (U21), L1431 (U18), C196, C88, C89, C146, D1, R71, R73, R101, R102, C81, C208, C230, C243, C256.	Factory
7/96	02		With the P54 step SY022 processor, the correct EISA ID is not recognized due to missing pull-ups on pins BF0 and BF1 of the P54. Apply 100 Ohm pull-up resistors on these pins.	Factory

Note: *Due to the random malfunctioning of the floppy driver during the specific system test, from June 1995 all the systems are equipped with a toroidal ferrite code 5415309V assembled on power supply cable for the axial fan code 5442071F which is fitted on a bracket and used to cool down the chipset. The assembly procedure is as follows: wind three rounds of the toroidal fan power supply cable then position the toroid near the floppy driver.*

WE12 BIOS EVOLUTION FOR THE GO2076, GO2123 (MONOPROCESSOR), GO2063, GO2079 (DUALPROCESSOR)

DATE	LEV.	BIOS	CODE	REASON FOR CHANGE
5/95	Nasc	1.08 WE12	562382 U	New WE12 BIOS. The BIOS is compatible with the SNX 140, 160, 140/R, 160/R, 160E, 160/RS. It differs from release 1.07 (PZD5) for the following reasons: - Support for the 100 MHz CPU board. - Support for PCI ACFG version 1.21U.
6/95	01AG	1.09 WE12		BIOS replaced to: - Support the PNS5162, the serial test is eliminated when "Embedded special serial port" is enabled
1/96	02	2.02 WE12		BIOS replaced to: - Support the following systems that are based on the Neptune chipset: SNX 160 - 66/100 MHz, SNX 160 - 60/90 MHz, SNX 160 - 66/133 MHz, SNX 140 - 50/75 MHz. - Solve the malfunction under NT 3.51 which signalled "PCI TARGET ABORT ERROR" when rebooting after a shutdown. The memory resources for PCI devices have been invalidated within the 0FFFC0000h to 0C0000000h address range and I/O resources within the 0FFFFh and 0F000h address range. The address space is now allocated under 3 GB for the buffers and under 0EFFFh for the I/O ports. - Solve the problem with OS/2 and Dagger controllers with an I/O space mapped at z805h. - Solve configuration problems with some LAN boards.
4/96	03	2.03 WE12		BIOS replaced to: - Enable the 0-Active RAS Mode when memory configuration is obtained by using more than four SIMMs; otherwise the 0-Active RAS Mode is disabled.

NOTES AND LIMITATIONS

SYSTEM CONFIGURATION

- Full support for the Configuration Manager and resolution of resource conflicts for PCI and Plug and Play ISA boards is available from ECU release 3.0.
  The ECU version for these systems is 2.07, which has the following limitations:
  - During the POD, the BIOS configures the PCI and ISA Plug and Play boards avoiding conflicts with the motherboard resources and with the ISA/EISA boards. The BIOS stores the PCI/ISA Plug and Play configuration in NVRAM, as virtual slots. This information cannot be modified since it is cancelled each time the configurator or the ROM Setup is used to configure the system, and then automatically rewritten to NVRAM by the BIOS at the next POD. The user must therefore make sure that the IRQ selected by the configurator for the virtual slot matches the one selected for the physical PCI slot.
  - When a configuration error occurs during the POD (corrupt NVRAM, invalid system configuration or bypass jumper installed), the Configuration Manager driver is not installed and error code FFFFFFFFh is displayed. Under these conditions it is impossible to determine the configuration of the PCI boards since the resources assigned to these boards are not dislayed. To have the Configurator display the assigned PCI resources, first solve all NVRAM errors so that the CM driver can be correctly installed. It is suggested to therefore activate the Configuration Program twice: once to clear any error from NVRAM, the second to display the complete PCI/EISA/ISA configuration.
    This procedure is also suggested when inserting or removing a PCI board.
- When a Plug & Play board is removed from the system, the related information is not cleared from NVRAM until the Configuration Manager driver is loaded.
- The BIOS code which automatically configured the PCI boards does not allow a PCI device to share an interrupt with a level-triggered EISA device if another interrupt is available. The interrupt can be shared if there are non available.
- If the remote terminal function is activated and an Olivetti WS685 terminal is used, this terminal must be configured as VT200 mode, 7-bit control.
- When the user decides not to use some of the HDUs present in the system and removes them from the rank, these hard disks must be completely removed to avoid that the HDU rails cause the loss of the Hot Swapping feature.
- A PCI RAID GO2061 SCSI controller cannot be installed if the system is already equipped with an EISA RAID GO2044 controller.
- It is suggested that the GO2044 boards be installed sequentially in the motherboard EISA slots so that they occupy adjacent slots without leaving any empty spaces or without having any other different board in between; any board located between two GO2044 boards must be removed.
- It is suggested that the GO2061 or GO2098 boards be installed sequentially in the motherboard EISA slots so that they occupy adjacent slots without leaving any empty spaces or without having any other different board in between; any board located between these two boards must be removed.
- Double-sided SIMMs must be installed on the CPU board starting from the lower banks.

OPERATING SYSTEMS

- The system hangs when booting from floppy disk with the AT&T UNIX operating system, an active remote terminal and motherboard SVGA enabled. This is a problem with the operating system that, during system boot, gives priority to the video controller instead of to the remote terminal attached to the serial port.
- The GO624 controller cannot be installed when a GO622 controller using the OS/2 ver. 2.x or NT ver. 3.1 operating system is already installed. This limitation will be removed with the successive releases of the OS/2 2.x and NT 3.1 drivers.
- Patch#5 V2.4.1 is required in order to be able to use the CDR 4S-500 under Unix SVR4 rel. 2.4.1.
- With Windows NT 3.5 and only on monoprocessor systems, after a software shutdown the system needs to be powered off before it can be rebooted. To avoid this problem, install NT 3.5 with the "Custom" Setup procedure and select the "Computer = Standard PC" option.
- With the Windows NT or Novell NetWare (3.1x and 4.x) operating systems, the "Extended Memory 16 MB Limit" option must be enabled on systems with more than 64 MB of memory. This function can be enabled from Built-In ROM Setup of from the configurator.
- With the UnixWare 2.0x with USF file system and Windows NT 3.5 and 3.51 operating systems, when there are disks with a capacity greater than 1 GB connected to the Dagger SCSI controller, use the Configurator to select the SCSI controller's "BIOS and Device Configuration" option and set the "Extended Translation for Drives > 1 GByte" parameter of the "BIOS Configuration" submenu to Disabled.
- With the SCO Unix 3.2.4.2 operating system and the PCI RAID SCSI controller in RAID1 (mirroring) configuration, the "SCSI Cmd Queuing" option of the board Configuration Utility must be Disabled. The configuration utility can be activated at the POD by pressing CTRL-D.
  This limitation will be solved from the PCI RAID SCSI controller firmware release later than 6CX.
- With the OS2 2.11 operating system and the PCI RAID SCSI controller, proceed as follows to install the Supplemental Disk generated by the Storage Manager:
  - Open "OS/2 System Folder", then "System Setup Folder".
  - Select "Device Driver Install".
  - Insert the Supplemental Disk into the drive.
  - Select "Install". A status message is displayed upon completion of this command: an error is indicated if the controller is not found.

  This limitation is currently solved.
- The following message may be displayed with the UnixWare operating system and a high disk load:
  INTERNAL ERROR M=3D T=3
  MESSAGE TIMEOUT M=3D T=6
  ERROR: returned from Engine, Program Terminated!!.
  Perform the logging procedure immediately by using the following command:
  /usr/dpt/dptelog &.
- With the NetWare 3.12 or 4.1 operating system, during a bootstrap with the CD-ROM connected to a RAID DPT PCI SCSI controller, the following message may be displayed which case it must be ignored:
  WARNING: SCSI BIOS ROM Version is later than this driver version. Drive not installed.
  The CD-ROM will still work correctly.

■