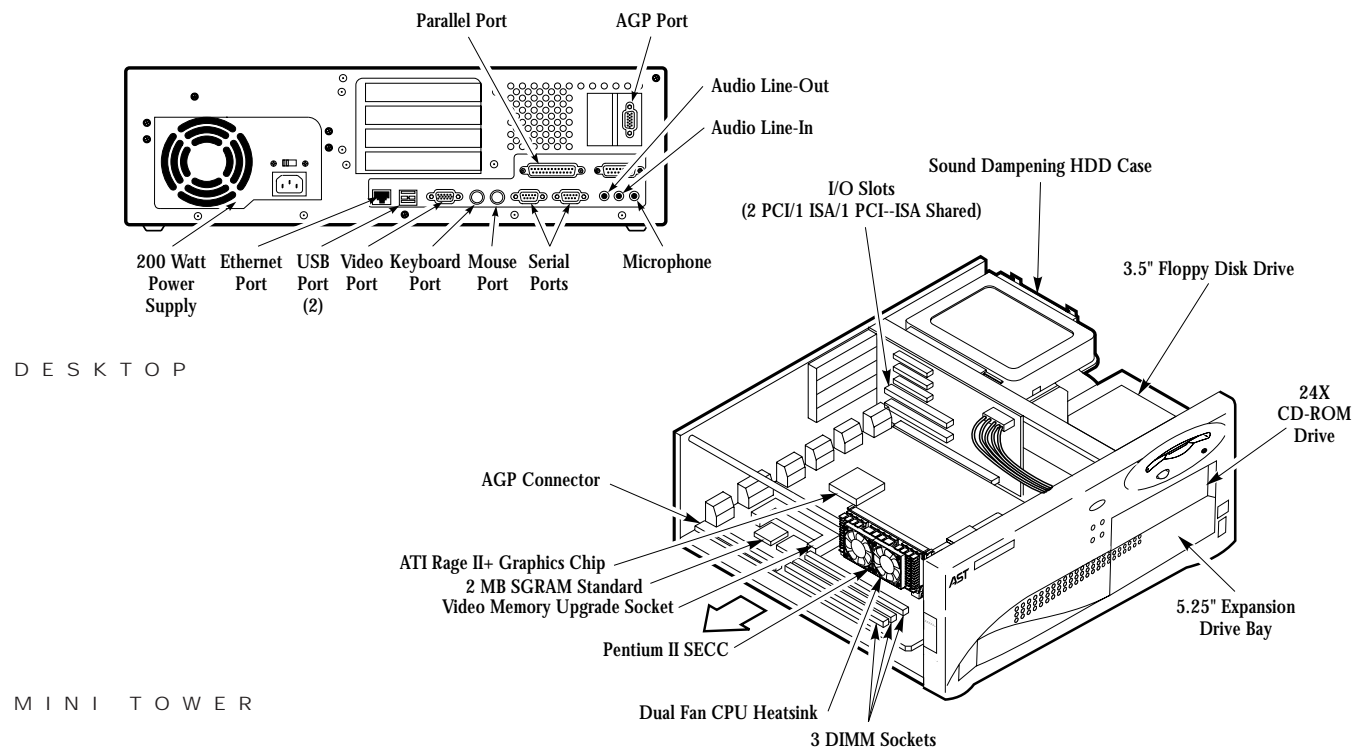


BRAVO MS

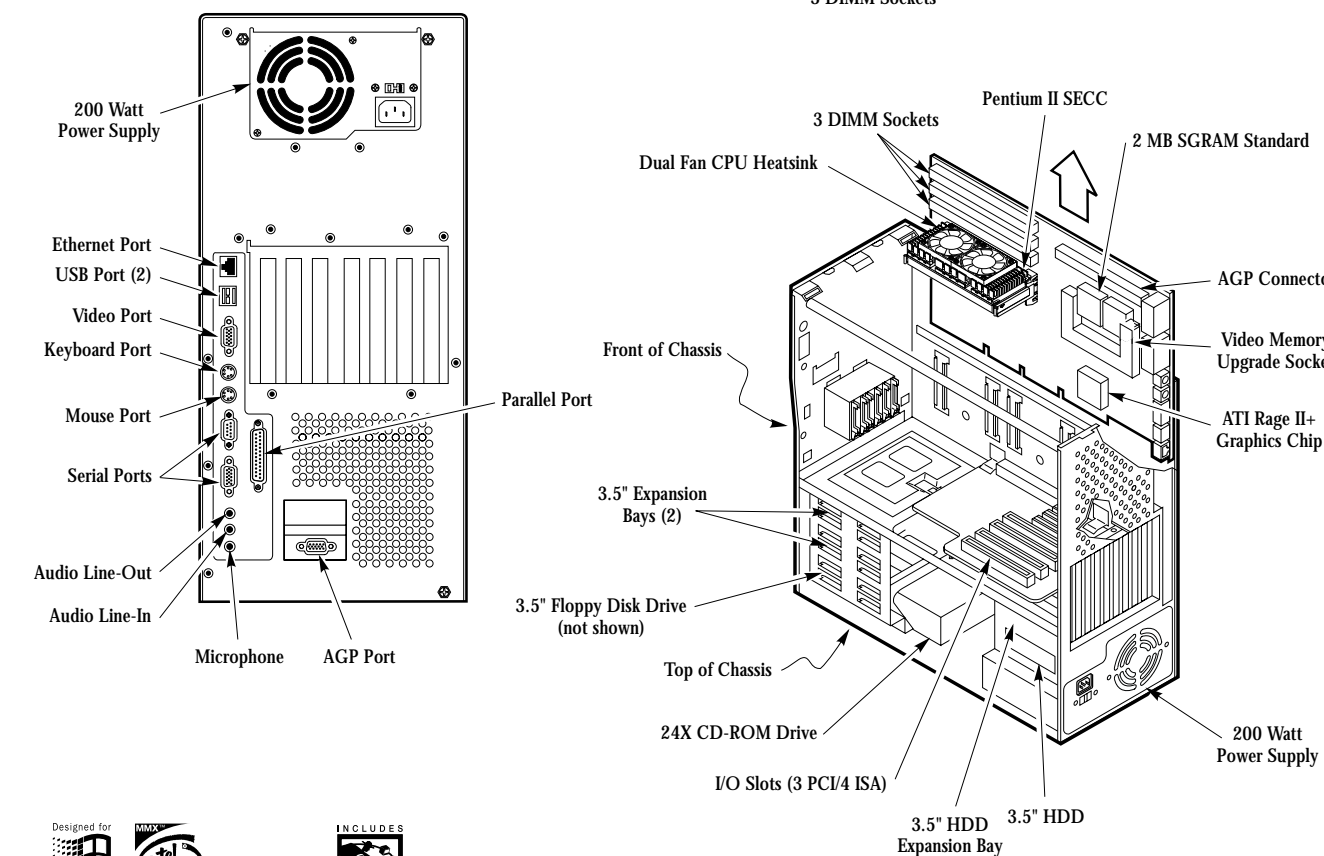
TECHNOLOGY OVERVIEW

AST NLX FLEXCHASSIS



DESKTOP

MINI TOWER



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BRAVO MS

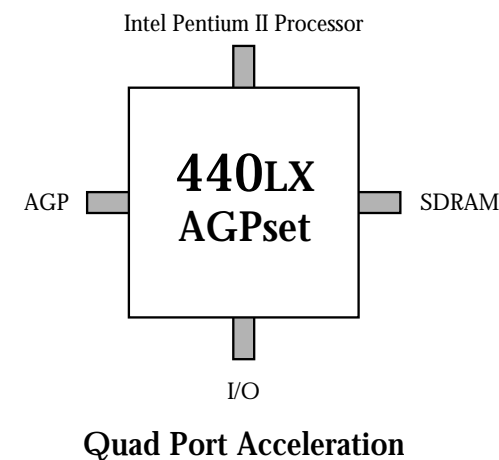
The Bravo MS Pentium II CPU-based business systems incorporate the latest advancements in leading edge technology such as the Intel® 440LX AGPset and the latest, most powerful Intel Pentium II processors. Adding value to this powerful architecture is the AST® NLX FlexChassis which both improves the ease of system serviceability and incorporates System Noise Reduction (SNR) technology for a quieter, more environmentally friendly personal computer. Additional leading edge technology that comes standard on the Bravo MS is ATI® Rage II+ 2D/3D graphics accelerator, UltraDMA-33 hard disk drives, Intel 10/100 Fast Ethernet, SDRAM, and 16-bit audio with 3D effect. Please read below for further information on each of these features.

INTEL PENTIUM II PROCESSOR

The Intel Pentium II processor is for those who have little patience for delays. No matter what you do on your business desktop, it can be done faster with the Pentium II processor. The Pentium II processor builds upon its Pentium Pro processor predecessor by incorporating 7.5 million transistors, 32 KB of primary cache, 512 KB of secondary cache, and Intel's MMX™ technology to bring to you the best performance available for 16-bit and 32-bit applications running on advanced operating systems such as Microsoft® Windows® 95 and Windows NT®. Software developers can use the Pentium II with MMX technology to improve full-motion video, enhance colors, and achieve smooth graphics. If you need the freedom to excel, the Intel Pentium II processor is for you.

INTEL 440LX AGPSET

With the Pentium II processor-based Bravo MS the business user gets full access to Intel's most feature rich core logic chipset, the Intel 440LX AGPset. The 440LX brings a leap forward in functionality to the Bravo MS, complementing the power of its Pentium II processor. Key technologies and features enabled by the 440LX include Accelerated Graphics Port (AGP) technology, Quad Port Acceleration, UltraDMA-33, SDRAM, and ACPI (Advanced Configuration and Power Interface). The impact of these features on the performance of the Bravo MS are highlighted below.



440LX AND QUAD PORT ACCELERATION

With the 440LX comes three unique architectural optimizations called Quad Port Acceleration (QPA) that increase overall system concurrency (bandwidth and performance), elevating the computing experience. QPA includes Direct Connect AGP, Dynamic Distributed Arbitration and Multistream Memory Access.



ACCELERATED GRAPHICS PORT (AGP)

Perhaps the most exciting technology brought forth by the new Bravo MS systems is AGP. The Accelerated Graphics Port (AGP) brings faster and better graphics to the Bravo MS. The best performance will be seen in AGP optimized applications, but non-AGP optimized applications will also benefit. AGP uses a connector similar to the PCI bus, with 32-bits of multiplexed address and data. While the PCI bus, clocked at 33 MHz, supports a maximum 132 MB/s transfer rate, an AGP point-to-point connection operating at 66 MHz yields a surprising

528 MB/s peak transfer rate. Although throughput may vary depending on application, it will usually obtain about 50–80% of peak rate in real world sustainable transfers. Note that AGP cards that support 133 MHz transfer rates are also supported on the Bravo MS.

A unique feature of AGP is that it can dynamically access unused main system memory — in addition to using its own dedicated memory. Fully-implemented AGP graphics chips can exploit main memory directly (known as DIME for Direct Memory Execute) for the complex operation of texture-mapping. Other key benefits of AGP are increased graphics bandwidth (at least 4X), increased overall system bandwidth (due to graphics I/O being removed from the PCI bus), and the equivalent of an extra expansion slot.

INTEGRATED PCI 2D/3D GRAPHICS — ATI RAGE II+

For those satisfied with standard PCI graphics, the Bravo MS's integrated ATI Rage II+ delivers superior 3D features and performance including perspective correct texturing, Gouraud shading and a host of other special 3D effects. Additionally, superior 2D acceleration is achieved through an advanced architecture that is optimized for SGRAM. On the Bravo MS graphics memory can be expanded to 6 MB of SGRAM.

AST NLX FLEXCHASSIS

With the push of a button the AST's FlexChassis allows easy access to the inside of your computer. This tool-less entry chassis surrounds the AST NLX system board which slides out of the chassis with a flip of a lever. The design of the chassis allows for full-length PCI, ISA, and AGP cards and easy access to any space on the system board, especially important when upgrading system or graphics memory. This tool-less chassis will dramatically reduce the time spent upgrading and servicing your computer, making system maintenance an ease and lower the total cost of ownership.

SYSTEM NOISE REDUCTION

As systems have become more powerful and faster, system noise has become more of an issue. AST's System Noise Reduction (SNR) technology addresses a variety of noise issues with a variety of solutions. Quieter, variable-speed fans are used to cool systems. Sound dampening materials are used to encase hard disk drives, reducing especially irritating high-pitched noises. Also, the location of fans and vents are designed to produce the best combination of noise reduction and cooling.

SDRAM DIMMS

Another feature optimized by the 440LX is SDRAM. SDRAM offer the fastest and most efficient system memory performance on the market. The Bravo MS uses 120 MHz SDRAM with a cycle time of 12 nanoseconds — typical EDO RAM has a cycle time of 60 nanoseconds. SDRAM is the first DRAM technology designed to synchronize itself with the processor. SDRAM (either ECC or non-ECC) is just another feature aimed at increasing the performance of the Bravo MS.

ULTRADMA-33 WITH S.M.A.R.T. AND CRC

Yet another major feature enabled by the 440LX is UltraDMA-33 technology, the latest in hard disk drive technology and standard on all Bravo MS systems. The burst transfer rate of an UltraDMA-33 hard disk drive is 33 MB/s which is more than double that of its predecessor, the PIO Mode 4 IDE hard disk drive. An additional feature on Bravo MS hard disk drive is S.M.A.R.T. (System Monitoring Analysis and Reporting Technology), an algorithm that will send a signal via LANDesk® if your hard disk drive exhibits signs of impending failure. Also included is a feature call CRC (Cyclical Redundancy Checking) which helps to maintain data integrity.

INTEGRATED INTEL 10/100 ETHERNET

Need to get connected to a network? Look no further. Integrated into the Bravo MS system board is Intel's PCI based 10/100 MB Ethernet which utilizes a 32-bit bus master architecture to provide the right balance of high throughput and low CPU utilization for optimal efficiency. The integrated Intel 10/100 Ethernet will automatically switch between 10 MB Ethernet and 100 MB Fast Ethernet depending on your network. Furthermore, the Bravo MS supports a Wake-on-LAN feature for improved network manageability.

INTEGRATED 16-BIT AUDIO

For those presentations with sound, for sound clips off the Internet, or for reviewing multimedia presentations from a CD-ROM, the Bravo MS provides its user with integrated rich Sound Blaster® compatible 16-bit audio with 3D effect and a high quality FM synthesizer. Through the use of multi-channel virtualization, a 6-speaker (Dolby® AC-3) can be recreated using just two computer speakers, bringing a new world of sound effects into any business presentation. The 3D solution produces an incredible surround sound effect without compromising the quality of the audio stream. As video conferencing technology and audio over the Internet become mainstream, audio streaming integrity will become very important. Your Bravo has the technology for the future.

| SYSTEM FEATURES | BRAVO MS (Desktop) | BRAVO MS (Mini-Tower) |
|----------------------------|--|---|
| INTEL PENTIUM II PROCESSOR | • 266 MHz | • 266 MHz • 300 MHz |
| DISK DRIVES | • Four Drive Bays — One 3.5" floppy drive — Two 5.25" external — One 3.5" internal | • Six Drive Bays — One 3.5" floppy drive — Three 5.25" external — Two 3.5" internal |
| AST NLX FLEXCHASSIS | • Desktop • 17.75" W x 5.45" H x 17.25" D (45.0 cm W x 13.8 cm H x 43.8 cm D) • Weight approx. 28 lbs (12.5 kg) | • Mini-Tower • 8.02" W x 17.5" H x 17.5" D (20.3 cm W x 44.5 cm H x 44.5 cm D) • Weight approx. 31 lbs (13.9 kg) |
| EXPANSION SLOTS | • Two 32-bit PCI • One 16-bit ISA • One PCI/ISA shared • One 32-bit AGP | • Three 32-bit PCI • Four 16-bit ISA • One 32-bit AGP |

INCLUDED IN BRAVO MS PENTIUM II CPU -BASED SYSTEMS

PROCESSOR

- Intel Pentium II processor
- MMX technology standard
 - Single Edge Cartridge (SEC) connector technology

CACHE

- Primary: integrated 32 KB
- Secondary: integrated 512 KB

CORE LOGIC

- Intel 440LX AGPset

MEMORY

- 32 MB of 120 MHz, 168-pin, non-parity SDRAM standard
 - Three industry standard DIMM sockets
 - Expandable to 384 MB on system board
 - Parity and ECC support

OPERATING SYSTEM & CERTIFICATION

- Choice of Microsoft Windows 95 or Windows NT Workstation 4.0
- Certified Operating Systems: Windows 95, Windows NT Workstation 4.0, OS/2, Novell® Netware® (File Server and Workstation) & SCO OpenServer

GRAPHICS SUBSYSTEM

- Integrated PCI ATI Rage II+DVD 64-bit 2D/3D graphics
- 2 MB SGRAM standard
 - upgradable to 6 MB via industry standard SO-DIMM
- High quality DVD/MPEG-2 playback
- 200 MHz internal DAC
- Maximum resolution: 1600 x 1200 NI, 65K colors @ 76 Hz or 1280 x 1024 NI, 16.7 M colors @ 75 Hz

ACCELERATED GRAPHICS PORT (AGP)

- Support for NLX form AGP cards
- 133 MHz point-to-point connection with 440LX AGPset

DRIVES & HARD DISK CONTROLLER

- 3.5" 4.3 GB EIDE UltraDMA-33 hard disk drive standard with S.M.A.R.T. (System Monitoring Analysis and Reporting Technology)
 - Typical Seek Time: <10 ms
 - Rotational Speed: 5400 RPMs
- Support for up to four EIDE/UltraATA devices
- 3.5" 1.44 MB Floppy Disk Drive
- 5.25" 24X Max-speed EIDE CD-ROM drive

AUDIO

- Integrated ESS 1869 (16-bit stereo) audio
 - Sound Blaster compatible with Spatializer 3D stereo effect

HARDWARE MONITORING

- Temperature, voltage, fan speed & chassis intrusion

POWER MANAGEMENT

- 200 watt power supply (front panel switch)
- Energy Star compliant
- VESA DPMS compliant
- Suspend/Resume
- APM 1.2 compliant
- Soft on/Soft off
- ACPI support

NETWORK INTERFACE CARD

- Integrated Intel 82557 10/100 Mbps PCI Ethernet controller
 - Disable via BIOS
- Magic Packet Technology (provides wake-up signal) with 5V standby power support

SOFTWARE

- AST-CommandCenter™
 - Intel LANDesk
 - McAfee® VirusScan™
 - McAfee WebScan™
 - AST SystemGuard™
 - ESS AudioRack
 - ESS AudioRecorder
- FlashBIOS
 - DMI 2.0 compliant

STANDARD REAR I/O

- Two USB ports
- Two serial ports
- One parallel port
- One PS/2 compatible mouse port
- One RJ45 Ethernet connector
- Three audio jacks: line-in, line-out & mic-in

KEYBOARD/MOUSE

- Standard 101/102-key layout plus three Windows 95 function keys
- Mini DIN connector
- Microsoft mouse

DOCUMENTATION

- AST User's Manual
- AST Getting Started Guide
- Microsoft Windows 95 or Windows NT 4.0 Manual

ENVIRONMENTAL CONDITIONS

- Operating temperature: 0° C to 55° C
- Non-Operating: -40° C to 70° C