



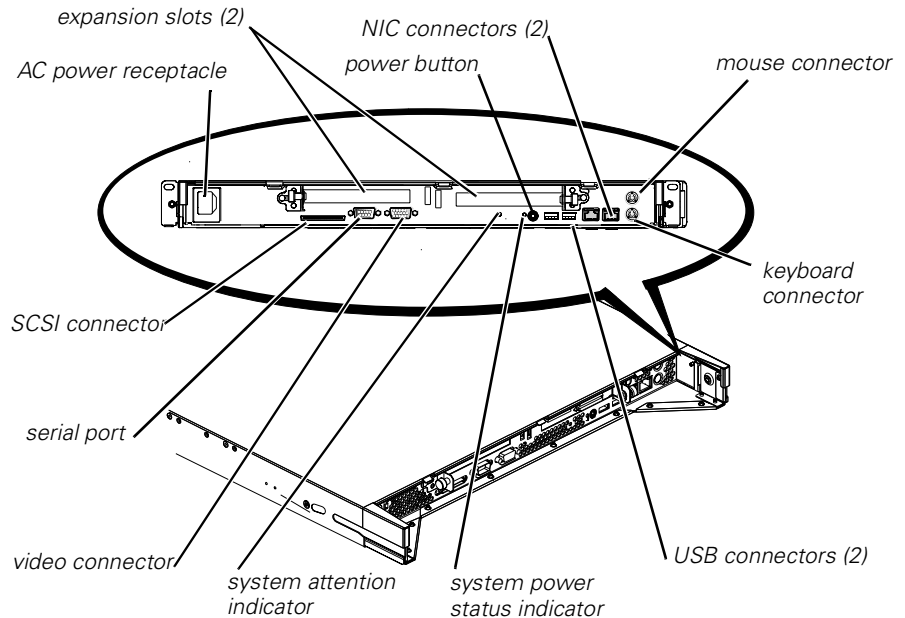
# APPENDIX B

## I/O Ports and Connectors

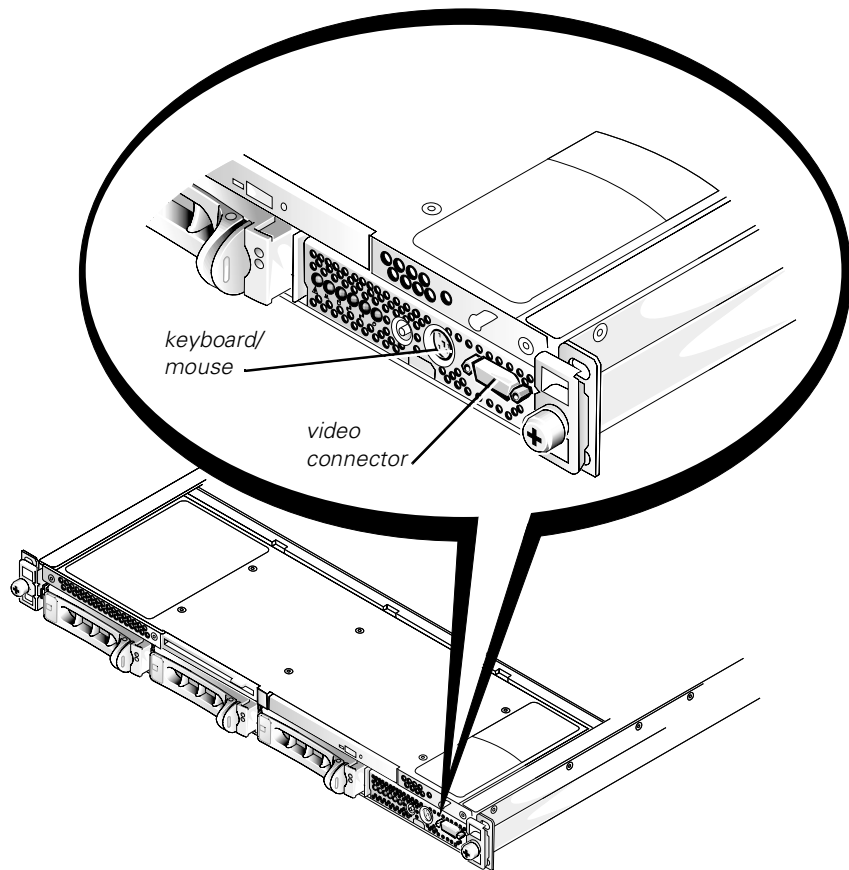
This appendix provides specific information about the input/output (I/O) ports and connectors on the back panel of the system.

### I/O Ports and Connectors

The I/O ports and connectors on the back panel of the system are the gateways through which the system communicates with external devices, such as a keyboard, mouse, and monitor. Figure B-1 identifies the rear panel I/O ports and connectors for your system and Figure B-2 identifies the front panel I/O ports.



**Figure B-1. Back Panel I/O Ports and Connectors**



**Figure B-2. Front Panel I/O Ports and Connectors**

## **Serial Port**

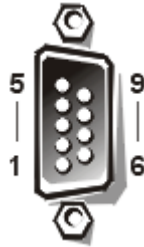
The integrated serial port uses 9-pin D-subminiature connector on the back panel. This port supports devices such as external modems and mice that require serial data transmission (the transmission of data one bit at a time over one line).

Most software uses the term COM (for communications) plus a number to designate a serial port (for example, COM1). The default designation of your system's integrated serial port is COM1.

Port designations can be used in software installation procedures to identify to which communication port a serial device, such as a modem, is attached.

## **Serial Port Connector**

If you reconfigure your hardware, you may need pin number and signal information for the serial port connector. Figure B-3 illustrates the pin numbers for the serial port connector and Table B-1 defines the pin assignments and interface signals for the serial port connector.



**Figure B-3. Pin Numbers for the Serial Port Connectors**

**Table B-1. Serial Port Pin Assignments**

<b>Pin</b>	<b>Signal</b>	<b>I/O</b>	<b>Definition</b>
<b>1</b>	DCD	I	Data carrier detect
<b>2</b>	SIN	I	Serial input
<b>3</b>	SOUT	O	Serial output
<b>4</b>	DTR	O	Data terminal ready
<b>5</b>	GND	N/A	Signal ground
<b>6</b>	DSR	I	Data set ready
<b>7</b>	RTS	O	Request to send
<b>8</b>	CTS	I	Clear to send
<b>9</b>	RI	I	Ring indicator
<b>Shell</b>	N/A	N/A	Chassis ground

## **Keyboard and Mouse Connectors**

The system uses a Personal System/2 (PS/2)-style keyboard and supports a PS/2-compatible mouse. Cables from both devices attach to 6-pin, miniature *Deutsche Industrie Norm* (DIN) connectors on the front and back panels of your system.

Mouse driver software can give the mouse priority with the microprocessor by issuing IRQ12 whenever a new mouse movement is detected. The driver software also passes along the mouse data to the application program that is in control.

## Keyboard Connector

If you reconfigure your hardware, you may need pin number and signal information for the keyboard connector. Figure B-4 illustrates the pin numbers for the keyboard connector. Table B-2 and Table B-3 defines the pin assignments and interface signals for the keyboard connector.



**Figure B-4. Pin Numbers for the Keyboard Connector**

**Table B-2. Keyboard Connector Pin Assignments (Back Panel)**

Pin	Signal	I/O	Definition
1	KBDATA	I/O	Keyboard data
2	NC	N/A	No connection
3	GND	N/A	Signal ground
4	FVcc	N/A	Fused supply voltage
5	KBCLK	I/O	Keyboard clock
6	NC	N/A	No connection
Shell	N/A	N/A	Chassis ground

**Table B-3. Keyboard/Mouse Combination Connector Pin Assignments (Front Panel)**

Pin	Signal	I/O	Definition
1	KBDATA	I/O	Keyboard data
2	MSDATA	I/O	Mouse data
3	GND	N/A	Signal ground
4	FVcc	N/A	Fused supply voltage
5	KBCLK	I/O	Keyboard clock
6	MSCLK	I/O	Mouse clock
Shell	N/A	N/A	Chassis ground

## Mouse Connector

If you reconfigure your hardware, you may need pin number and signal information for the mouse connector. Figure B-5 and illustrates the pin numbers for the mouse connector. Figure B-5 and Table B-4 defines the pin assignments and interface signals for the mouse connector.



**Figure B-5. Pin Numbers for the Mouse Connector**

**Table B-4. Mouse Connector Pin Assignments (Back Panel)**

Pin	Signal	I/O	Definition
1	MSDATA	I/O	Mouse data
2	NC	N/A	No connection
3	GND	N/A	Signal ground
4	FVcc	N/A	Fused supply voltage
5	MSCLK	I/O	Mouse clock
6	NC	N/A	No connection
Shell	N/A	N/A	Chassis ground

**Table B-5. Mouse/Keyboard Combination Connector Pin Assignments (Front Panel)**

Pin	Signal	I/O	Definition
1	KBDATA	I/O	Keyboard data
2	MSDATA	I/O	Mouse data
3	GND	N/A	Signal ground
4	FVcc	N/A	Fused supply voltage
5	KBCLK	I/O	Keyboard clock
6	MSCLK	I/O	Mouse clock
Shell	N/A	N/A	Chassis ground



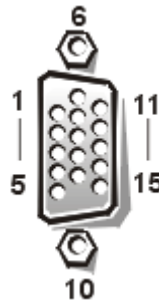
## Video Connector

*NOTES: This system provides two video connectors, one on the back panel, and one on the front-panel. If the monitor is connected to the front panel video connector, the back panel video connector is disabled.*

*The keyboard and mouse must be connected to the same panel as the monitor. For example, if the monitor is connected to the front panel video connector, the keyboard and mouse must also be connected to the keyboard/mouse front panel connector. This connector is a PS/2 connector and the keyboard connection is the default. To use both the keyboard and mouse from the front panel connector, you must use a splitter cable (Y-cable).*

The system uses a 15-pin high-density D-subminiature connector on the front and back panels for attaching a video graphics array (VGA)-compatible monitor to your system. The video circuitry on the system board synchronizes the signals that drive the red, green, and blue electron guns in the monitor.

If you reconfigure your hardware, you may need pin number and signal information for the video connector. Figure B-6 illustrates the pin numbers for the video connector, and Table B-6 defines the pin assignments and interface signals for the video connector.



**Figure B-6. Pin Numbers for the Video Connector**

**Table B-6. Video Connector Pin Assignments**

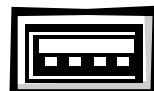
Pin	Signal	I/O	Definition
1	RED	O	Red video
2	GREEN	O	Green video
3	BLUE	O	Blue video
4	NC	N/A	No connection
5–8, 10	GND	N/A	Signal ground
9	VCC	N/A	Vcc
11	NC	N/A	No connection
12	DDC data out	O	Monitor detect data
13	HSYNC	O	Horizontal synchronization
14	VSYNC	O	Vertical synchronization
15	DDC clock out	O	Monitor detect clock
Shell	N/A	N/A	Chassis ground

## USB Connectors

Your system contains two single-stack, side-by-side Universal Serial Bus (USB) connectors for attaching USB-compliant devices. USB devices are typically peripherals such as mice, keyboards, and system speakers.

**NOTICE: Do not attach a USB device or a combination of USB devices that draw a maximum current over 500 milliamperes (mA) per channel or +5 volts (V). Attaching devices that exceed this threshold may cause the USB ports to shut down. See the documentation that accompanied the USB devices for their maximum current ratings.**

If you reconfigure your hardware, you may need pin number and signal information for the USB connectors. Figure B-7 illustrates the USB connector and Table B-7 defines the pin assignments and interface signals for the USB connector.



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**Figure B-7. Pin Numbers for the USB Connector**

**Table B-7. USB Connector Pin Assignments**

Pin	Signal	I/O	Definition
1	Vcc	N/A	Supply voltage
2	DATA	I	Data in
3	+DATA	O	Data out
4	GND	N/A	Signal ground

## **Integrated NIC Connectors**

Your system has two integrated 10/100–megabit-per-second (Mbps) network interface controllers (NIC). The NICs provide all the functions of a separate network expansion card and support both the 10BASE-T and 100BASE-TX Ethernet standards.

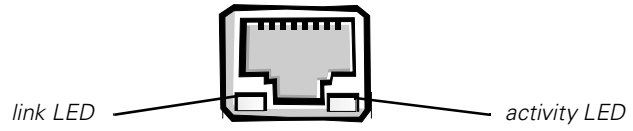
The NICs include a Wake On LAN feature that enables the system to be started by a special local area network (LAN) signal from a server management console. Wake On LAN allows the system administrator to power-on systems normally powered off during non-working hours. After-hour administrative activities include remote system setup, software downloading and installation, file updates, and asset tracking, all of which are run after hours and on weekends when LAN traffic is typically at a minimum.

## **Network Cable Requirements**

Your system's RJ45 NIC connector is designed for attaching an unshielded twisted pair (UTP) Ethernet cable equipped with standard RJ45-compatible plugs. Press one end of the UTP cable into the NIC connector until the plug snaps securely into place. Connect the other end of the cable to an RJ45 jack wall plate or to an RJ45 port on a UTP concentrator or hub, depending on your network configuration. Observe the following cabling restrictions for 10BASE-T and 100BASE-TX networks.

**NOTICE: To avoid line interference, voice and data lines must be in separate sheaths.**

- For 10BASE-T networks, use Category 3 or greater wiring and connectors.
- For 100BASE-TX networks, use Category 5 or greater wiring and connectors.
- The maximum cable run length (from a workstation to a concentrator) is 328 feet (ft) (100 meters [m]).
- For 10BASE-T networks, the maximum number of daisy-chained concentrators on one network segment is four.



**Figure B-8. NIC LEDs**