MAX 200Plus
Getting Started

Ascend Communications, Inc.

Part Number 7820-0428-002 June 4, 1997

FCC Part 15

Warning: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless the changes or modifications are expressly approved by Ascend.

Canadian Notice

Note: The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situation.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give

the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The *Load Number (LN)* assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

This equipment does not support line loopbacks.

Warning: THE DIGITAL APPARATUS DOES NOT EXCEED THE CLASS A LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATIONS OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE LA CLASSE A PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

Important safety instructions

The following safety instructions apply to the MAX:

1 Read and follow all warning notices and instructions marked on the product or included in the manual.

2 The maximum recommended ambient temperature for MAX models is 104° Fahrenheit (40° Celsius). Care should be given to allow sufficient air circulation or space between units when the MAX is installed in a closed or multi-unit rack assembly, because the operating ambient temperature of the rack environment might be greater than room ambient.

3 Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.

4 Installation of the MAX in a rack without sufficient air flow can be unsafe.

5 If installed in a rack, the rack should safely support the combined weight of all equipment it supports.

6 The connections and equipment that supply power to the MAX should be capable of operating safely with the maximum power requirements of the MAX. In the event of a power overload, the supply circuits and supply wiring should not become hazardous. The input rating of the MAX is printed on its nameplate.

7 Models with AC power inputs are intended to be used with a three-wire grounding type plug - a plug which has a grounding pin. This is a safety feature. Equipment grounding is vital to ensure safe operation. Do not defeat the purpose of the grounding type plug by modifying the plug or using an adapter.

8 Prior to installation, use an outlet tester or a voltmeter to check the AC receptacle for the presence of earth ground. If the receptacle is not properly grounded, the installation must not continue until a qualified electrician has corrected the problem. Similarly, in the case of DC input power, check the DC ground (s).

9 If a three-wire grounding type power source is not available, consult a qualified electrician to determine another method of grounding the equipment.

10 Models with DC power inputs must be connected to an earth ground through the terminal block Earth/Chassis Ground connectors. This is a safety feature. Equipment grounding is vital to ensure safe operation.

11 Prior to installing wires to the MAX's DC power terminal block, verify that these wires are not connected to any power source. Installing live wires (that is, wires connected to a power source) is hazardous.

12 Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.

13 Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.

14 General purpose cables are provided with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.

15 When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.

16 A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are **interconnected**, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.

In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using equipment connected to telephone lines (other than a cordless telephone) during an electrical storm. There is a remote risk of electric shock from lightning.

- Do not use a telephone or other equipment connected to telephone lines to report a gas leak in the vicinity of the leak.

Product warranty

1 Ascend warrants that the MAX will be free from defects in material and workmanship for a period of twelve (12) months from date of shipment.

2 Ascend shall incur no liability under this warranty if

- the allegedly defective goods are not returned prepaid to Ascend within thirty (30) days of the discovery of the alleged defect and in accordance with Ascend's repair procedures; or
- Ascend's tests disclose that the alleged defect is not due to defects in material or workmanship.

3 Ascend's liability shall be limited to either repair or replacement of the defective goods, at Ascend's option.

4 Ascend MAKES NO EXPRESS OR IMPLIED WARRANTIES REGARDING THE QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE BEYOND THOSE THAT APPEAR IN THE APPLICABLE Ascend USER'S DOCUMENTATION. Ascend SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGE, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO BUSINESS OR BUSINESS RELATIONS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES.

Warranty repair

1 During the first three (3) months of ownership, Ascend will repair or replace a defective product covered under warranty within twenty-four (24) hours of receipt of the product. During the fourth (4th) through twelfth (12th) months of ownership, Ascend will repair or replace a defective product covered under warranty within ten (10) days of receipt of the product. The warranty period for the replaced product shall be ninety (90) days or the remainder of the warranty period of the original unit, whichever is greater. Ascend will ship surface freight. Expedited freight is at customer's expense.

2 The customer must return the defective product to Ascend within fourteen (14) days after the request for replacement. If the defective product is not returned within this time period, Ascend will bill the customer for the product at list price.

Out-of warranty repair

Ascend will either repair or, at its option, replace a defective product not covered under warranty within ten (10) working days of its receipt. Repair charges are available from the Repair Facility upon request. The warranty on a serviced product is thirty (30) days measured from date of service. Out-of-warranty repair charges are based upon the prices in effect at the time of return.

Ascend Customer Service

When you contact Ascend Customer Service, make sure you have this information:

- The product name and model
- The software and hardware options
- The software version
- The SPIDs (Service Profile Identifiers) associated with your product
- Your local telephone company switch type and operating mode, such as AT&T 5ESS Custom or Northern Telecom National ISDN-1
- Whether you are routing or bridging
- The type of computer you are using
- A description of the problem

How to contact Ascend Customer Service

Telephone in the United States	800-ASCEND-4 (800-272-3634)
Telephone outside the United States	510-769-8027 (800-697-4772)
- UK	(+33) 492 96 5671
- Germany/Austria/Switzerland	(+33) 492 96 5672
- France	(+33) 492 96 5673
- Benelux	(+33) 492 96 5674
- Spain/Portugal	(+33) 492 96 5675
- Italy	(+33) 492 96 5676
- Scandinavia	(+33) 492 96 5677
- Middle East and Africa	(+33) 492 96 5679
E-mail	support@ascend.com
E-mail (outside US)	EMEAsupport@ascend.com
Facsimile (FAX)	510-814-2312
Customer Support BBS by modem	510-814-2302

You can also contact the Ascend main office by dialing 510-769-6001, or you can write to Ascend at the following address:

Ascend Communications, Inc.
1701 Harbor Bay Parkway
Alameda, CA 94502-3002

Need information on new features and products?

We are committed to constantly improving our products. You can find out about new features and product improvement as follows:

- For the latest information on the Ascend product line, visit our site on the World Wide Web: `http://www.ascend.com/`
- For software upgrades, release notes, and addenda to this manual, visit our FTP site: `ftp.ascend.com`

Contents

About this guide

This guide shows you how to install the MAX 200Plus hardware. When you finish with this guide, you will be ready to configure the MAX 200Plus.

What is in this guide?

This guide contains the following chapters:

- Chapter 1, “Getting acquainted with the MAX 200Plus,” provides a conceptual overview of the product.
- Chapter 2, “Installing the hardware,” explains how to install the hardware and insert the PC cards.
- Appendix A, “Troubleshooting,” helps you correct problems, if you encounter them.
- Appendix B, “Hardware specifications,” lists the specifications of the MAX 200Plus hardware.
- Appendix C, “Matching Slot Numbering with the Console,” describes the two sets of slot numbers that may appear on your MAX 200Plus.

What you should know

This guide is intended for the person who installs the MAX 200Plus. You should know how to use Microsoft Windows 95 and understand the following:

- Communications hardware
- Wide area network (WAN) concepts and terms
- Local area network (LAN) concepts and terms, if applicable

- Protocols you intend to use, such as AppleTalk, TCP/IP, or IPX

Documentation conventions

This section shows the documentation conventions used in this guide.

Convention	Meaning
Note:	A note signifies important additional information.
 **Caution:**	A caution means that a failure to follow the recommended procedure could result in a loss of data or damage to equipment.
 **Warning:**	A warning means that a failure to take appropriate safety precautions could result in physical injury.

Documentation set

The MAX 200Plus documentation consists of the following manuals:

- Getting Started
- Windows 95 User's Guide
- MAXLink Client DOS & Windows User's Guide
- Administrator's Guide
- Supplemental Documentation Set

Related publications

This guide and documentation set do not provide a detailed explanation of products, architectures, or standards developed by other companies or organizations.

Here are some related publications that you may find useful:

- *Data Link Protocols*, Uyless Black
- *The Basics Book of ISDN*, Motorola University Press
- *ISDN*, Gary C. Kessler
- *TCP/IP Illustrated*, W. Richard Stevens
- *Firewalls and Internet Security*, William R. Cheswick and Steven M. Bellovin

Getting acquainted with the MAX 200Plus

1

This chapter introduces you to the MAX 200Plus, describes its components, and explains how it fulfills your remote access needs. This chapter covers these topics:

What is the MAX 200Plus?

The MAX 200Plus is a high-performance, remote access switch. A remote access switch allows nomadic computer users to connect to their network, using all available means of communication, no matter where they are (Figure 1-1). Through analog or ISDN (Integrated Services Digital Network) connections, cellular, mobile, or desktop users can connect to their network through the MAX 200Plus remote access switch.

When you install the MAX 200Plus on your network, the MAX 200Plus houses your PC cards, allowing mobile computer users to dial in and access file servers, printers, e-mail, and other network devices exactly as if they were directly connected to the local network.

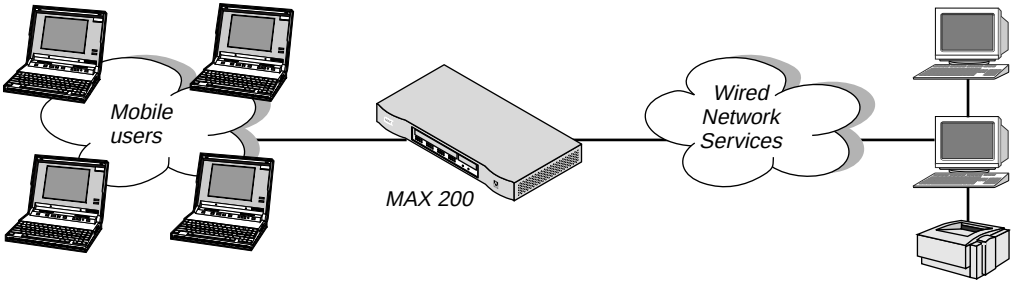

Figure 1-1. A remote access switch gives mobile users access to wired network services

The MAX 200Plus offers a unique network access solution through the use of PC cards and software upgrades. Its simplicity, ease of use, compatibility, modularity, and flexibility revolutionize the way you access a network from a mobile computer.

The MAX 200Plus supports up to eight Type II PC cards (such as modems) and four Type III PC cards (such as Ascend ISDN adapters). You may be more familiar with methods of remote access involving a computer dedicated to remote access or a remote network server. This method requires standalone modems and power supplies with corresponding cables and required power strips connected to the server.

The MAX 200Plus with PC cards replaces this complex method with style and flexibility. The unique design of the MAX 200Plus uses only a single power cord to supply power for the PC cards. The MAX 200Plus also supports automatic configuration, eliminating the need to hunt for and configure confusing commands.

The MAX 200Plus remote access switch is based on a powerful modular platform, including enough power to fully support high-speed data transmissions.

For a detailed explanation of the MAX 200Plus administrative features, refer to the *MAX 200Plus Administrator's Guide*.

What are PC cards?

A PC card is about the size of standard credit card and slides directly into the MAX 200Plus, and many portable computers. A PC card requires a cable that dangles from each card on the back of a MAX 200Plus, instead of multiple cables like standard adapters. PC card is the industry term for PCMCIA-specified cards, or Personal Computer Memory Card International Association, which is the technical committee that sets the standards for credit-card sized adapter cards.

Type I PC cards are 3.3 millimeters thick and are typically used for various types of memory enhancements. Type II cards are slightly thicker and often are used for memory enhancements and communications, such as modems. Type III cards are twice as thick as Type II cards and are mostly used for features that require a larger size, such as ISDN interfaces and removable hard disk drives. The MAX 200Plus uses Type II PC card modems and Type III PC cards, such as Ascend ISDN adapters. Figure 1-2 shows a PC card.

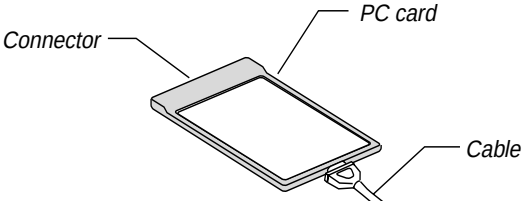

Figure 1-2. A PC card

Installing the hardware

2

This chapter explains how to install the MAX 200Plus hardware. This chapter covers these topics:

What is included in your package?

The MAX 200Plus package includes these items:

- The MAX 200Plus unit
- One of the following AC power cables to connect the IEC power connector to an AC power outlet:
  - 110V (USA/Domestic)
  - 220V (foreign)
- One MAX 200Plus Console Installation diskette
- Two Microsoft Win32s diskettes (for administrators who use Windows 3.1 instead of Windows 95)
- Two MAXLink PPP Client diskettes
- One MAXDial diskette, if ordered (see the *MAXDial User's Guide*)
- One Rack Mount Adapter Kit that contains two rack-mounting brackets and four screws (for mounting the MAX 200Plus in a rack)
- Four rubber feet to attach to the unit, if you plan to place it on a table top

You may also have a package that contains PC cards. For example, if you ordered ISDN connectivity, you have a separate package that contains the Ascend ISDN BRI U- or S-interface PC cards. Each MAX 200Plus can accommodate a maximum of four Type III PC cards, such as the Ascend ISDN adapters.

If you are missing any items, contact your Ascend distributor.

What you need before you start

To use the MAX 200Plus, you need the following items:

- A functioning thick or twisted-pair Ethernet network.
- PC cards, such as modems or Ascend ISDN adapters.

  See the readme file on the MAX 200Plus Console Installation diskette or the Ascend World Wide Web Site (http:\\www.ascend.com\) for a list of supported PC card modems.

- Analog or ISDN BRI (Basic Rate Interface) telephone lines to connect to the PC cards, depending on your setup.
- An IBM-compatible PC, running Microsoft Windows 95 or Windows 3.1 (preferably Windows 95).

What is on the back panel?

Before you begin setting up the hardware, look at the back of the MAX 200Plus and refer to Figure 2-1 to identify each back panel component. If you need more information about any component, read the description in Table 2-1.

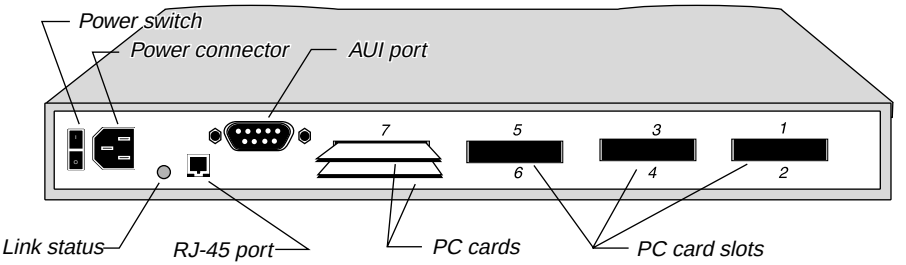

Figure 2-1. MAX 200Plus back panel

Note: Figure 2-1 shows two PC card modems inserted in slots 4 and 8. One Ascend PC card ISDN adapter requires two slots.

Table 2-1. MAX 200Plus back panel components

Back panel component	Description
Power switch	Turns unit power ON or OFF.
Power connector	Connects the power cable from the MAX 200Plus to the grounded power source.

Table 2-1. MAX 200Plus back panel components (continued)

Back panel component	Description
Link status LED	Identifies the status of the 10BaseT Ethernet connection. If the LED is ON, a working connection exists between the MAX 200Plus 10BaseT port and the Ethernet hub.
RJ-45 port	Connects your 10BaseT cable to your Ethernet network.
AUI port	Connects your thick Ethernet cable to your Ethernet network.
PC card slots	Houses the PC card modems and Ascend ISDN adapters.

Now that you have identified the back panel components, continue with the next section to identify what is on the front panel.

What is on the front panel?

The front panel contains 34 LEDs. Thirty-two LEDs correspond with the eight PC card slots on the back panel. The other two LEDs display power and network traffic.

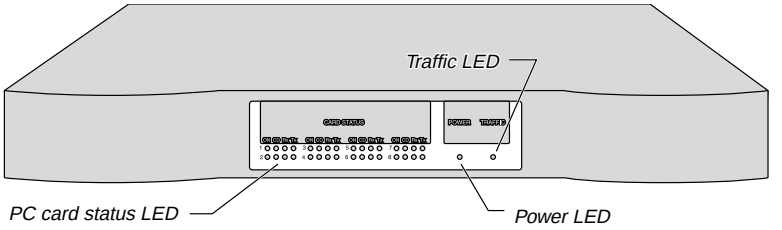

Figure 2-2. MAX 200Plus front panel

Detailed information about LEDs appear later in the section, “Interpreting LEDs,” and in Appendix A, “Troubleshooting.”

Proceed to the next section to learn about the cables and connectors associated with the MAX 200Plus.

Cable and connectors

The MAX 200Plus conforms to the Unshielded twisted-pair (10BaseT) and thick Ethernet (10Base5) standards defined by the IEEE 802.3 standard. Table 2-2 describes the cables and connectors associated with the MAX 200Plus.

Table 2-2. MAX 200Plus cables and connectors

Cable/ Connector	Description
10BaseT cable	10BaseT is an Ethernet cable system that uses unshielded twisted-pair wiring and has RJ-45 eight-conductor plugs at each end.
RJ-45 connector	This is the connector on both ends of a 10BaseT cable. It fits into the RJ-45 port on the back panel of the MAX 200Plus.
AUI connector	The Attachment Unit Interface (AUI) is a 15-pin D-Subminiature connector that connects to a transceiver on thick Ethernet (10Base5) cable systems.
Thick Ethernet cable	Thick Ethernet is usually heavy, yellow coaxial cable. It is sometimes called standard Ethernet.

Now you are ready to install the hardware. Continue with the next section, “Setting up the hardware.”

Setting up the hardware

This section provides brief steps for quickly setting up the MAX 200Plus hardware. If you feel confident that you can follow the steps in this section without further explanation, complete the steps and skip to the last section in this chapter, "Where to go next." Otherwise, follow these steps and refer to the remaining sections in this chapter:

1 Gather the contents of your product package and make sure the back panel of the unit is facing you.

2 Make sure the MAX 200Plus power switch is in the off position. The MAX 200Plus is off when you press the bottom half of the power switch.

3 Insert the PC cards you plan to use and attach the appropriate telephone cable. You can insert up to eight modems, four Ascend ISDN adapters, or any combination thereof into the numbered PC card slots.

For more information, refer to the section "Inserting PC cards."

4 Attach the unit to an equipment rack or place it on any flat surface. Use the Rack Mount Adapter Kit or rubber feet included in your package. For more information, refer to the next section, "Positioning the MAX 200Plus."

5 Connect the MAX 200Plus into a grounded power outlet, using the power cord.

6 Connect the unit to your network. Connect the MAX 200Plus directly to a thick or twisted-pair Ethernet network. Only one Ethernet connection can be made at a time. For more information, refer to "Connecting the MAX 200Plus to your network."

7 Turn the power on. For more information on powering up the unit, refer to "Starting up the MAX 200Plus." If you need information about LEDs, refer to the section "Interpreting LEDs."

For more detailed information, continue with the next section. Otherwise, skip to the section, "Where to go next."

Positioning the MAX 200Plus

Use the instructions in this section to rack-mount the MAX 200Plus in a wiring closet or place it on a flat surface.

Rack-mounting the unit

Use the mounting brackets (included) to attach the MAX 200Plus to your equipment rack. You can attach the rack-mounting ears to either the front or rear of the MAX 200Plus. Follow these steps:

1 Place the MAX 200Plus upside-down on a flat surface, with the front panel facing you.

2 Align the screw holes on a rack mount bracket with the screw holes on the MAX 200Plus. You can position the bracket in either direction to accommodate your particular equipment rack.

3 Using a Phillips screwdriver, attach the three screws included with your kit.

4 Follow steps 2 and 3 to attach the other bracket.

5 Follow the equipment rack's manufacturer's instructions to attach the MAX 200Plus to your rack.

Placing the unit on a flat surface

The MAX 200Plus can be installed on any flat surface using the four rubber feet included in the package. If you place the MAX 200Plus on a table, make sure you choose a location where air can circulate. Check to see that none of the MAX 200Plus's air vents are obstructed.

Peel the adhesive tape off the rubber feet and position a pad on each corner of the bottom of the MAX 200Plus case.

Inserting PC cards

The MAX 200Plus can accommodate any combination of Type II PC cards (such as modems) and Type III PC cards (such as Ascend ISDN adapters). Here are the maximum number of cards you can insert in the unit:

- Eight Type II PC cards, such as modems
- Four Type III PC cards, such as ISDN adapters

Note: PC cards are "hot-swappable." This means you can insert and eject the cards when the MAX 200Plus power is on without damaging the cards or the unit. However, you should restart the unit for proper operation.

The following paragraphs explain how to insert a Type II or Type III PC card in the MAX 200Plus. For a list of supported modems, refer to the Read Me file on the MAX 200Plus Console Installation diskette.

To insert a PC card in the unit, follow these steps:

1 Plug a modem or ISDN cable into each modem or ISDN adapter, respectively.

Connect the PC cards to the MAX 200Plus by pushing each one of them into a numbered slot on the back panel. Figure 2-3 shows PC card modems.

Generally, PC cards have an arrow that helps you know which direction they should be inserted. Because the modem slots are grouped together in twos, you should hold the modem horizontally when inserting it into the slot to avoid an improper positioning.

Figure 2-3. PC card modems in numbered slots

Note: PC card modems with internal RJ-11 adapters (such as XJACKs) should only be used in the upper slots. In this way, the telephone cable plugged into the modem does not interfere with modems in the lower slots.

2 When a PC card is firmly connected, the eject button associated with it pops out.

   We suggest that you begin with slot number one and continue in numerical order, However, you can use any combination of the eight slots on the back of the MAX 200Plus.

3 Use the appropriate cable to connect the PC cards to the telephone wall jacks.

   For example, plug the RJ-11 connector to one end of the cable into the telephone system. Refer to the modem's documentation before connecting it to the telephone system.

4 Check your connection. When a PC card is firmly connected, the eject button associated with it pops out. The green LED labeled ON LEDs when your PC card has been installed correctly.

   If you need to eject a PC card, refer to the next section.

Ejecting PC cards

You can easily remove PC cards from the MAX 200Plus by pushing the eject button associated with the PC card you want to remove.

To eject a Type III PC card, such as an Ascend ISDN adapter, push the button shown on the left side of the slot.

As for PC card modems, the button on the left side of each slot corresponds with the top modems (1-4). The button on the right side of each modem slot corresponds with the bottom modems (5-8).

Note: Due to the fact that two modem slots are housed in each combined unit and physically touch each other, it is possible that both modems may be ejected by pushing only one button. Be aware of this when you eject a

modem that is in use, because access to the other modem might be cut off as well.

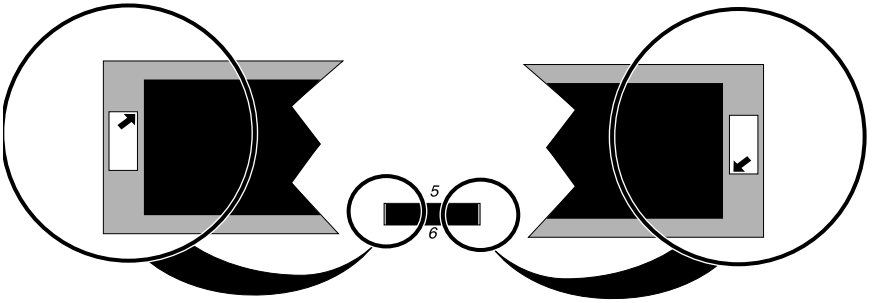

Figure 2-4. PC card eject buttons

The direction of the arrow on the eject button indicates which modem will be ejected, top or bottom. This procedure is similar to ejecting a cassette tape from a car stereo. Push the button and the modem is ejected from the slot.

Connecting the MAX 200Plus to your network

You can connect the MAX 200Plus directly to your thick or 10BaseT Ethernet cabling system. The MAX 200Plus's Ethernet connections are auto-sensing. This means that the MAX 200Plus automatically switches to the appropriate connection. Simply plug it in and it works.

To install MAX 200Plus on your network, follow the instructions associated with your particular cabling system.

Note: Only one Ethernet connection should be made at a time for auto-sensing to work properly.

Connecting the MAX 200Plus to 10BaseT

The MAX 200Plus can be connected to twisted-pair Ethernet cables through its RJ-45 port. Follow these steps:

1 Plug one end of the 10BaseT cable into the RJ-45 port on the back panel of the MAX 200Plus.

2 Plug the other end of the 10BaseT cable into the existing network hub. Check for link status after the MAX 200Plus is powered on.

Connecting the MAX 200Plus to Thick Ethernet

Connect the MAX 200Plus to thick Ethernet through its AUI port. Follow these steps:

1 Open the slide mechanism on the AUI connector.

2 Insert the AUI connector.

3 Push the slide mechanism to secure the connection.

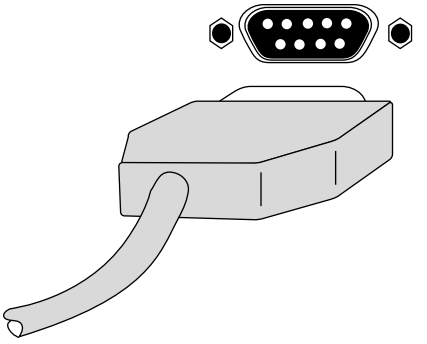

Figure 2-5. Connecting to Thick Ethernet

Interpreting LEDs

This section details the operation of the LEDs. Once you understand what the LEDs indicate, why they flash, and when they should not be flashing, you can use them to interpret information about your MAX 200Plus and the PC cards connected to it. The MAX 200Plus PC card Status LEDs are shown in the following figure.

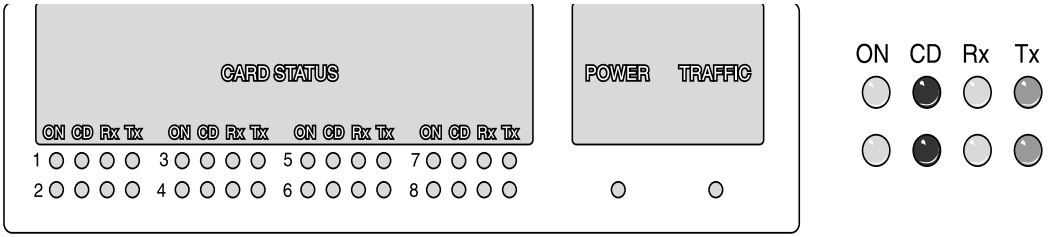

Figure 2-6. PC card Status LEDs

Link Status LED

The MAX 200Plus back panel has one LED that provides link status information about the 10BaseT connection to your Ethernet network. If the LED is on, a good connection has been made between the MAX 200Plus's 10BaseT connector and the hub.

Power and Traffic LEDs

The green Power LED on the front panel of the MAX 200Plus indicates when the MAX 200Plus has been turned on and is receiving power.

The yellow Traffic LED displays Ethernet traffic, indicating that the MAX 200Plus has been properly installed and is transmitting and receiving data across the network.

LED activity and Type II PC cards (modems)

The eight modem slots on the MAX 200Plus's back panel each have four corresponding LEDs that include

- ON (Power is green)
- CD (Carrier Detect is red)
- Rx (Receive data is yellow)
- Tx (Transmit data is yellow)

on the front panel. These four LEDs provide status information corresponding to each of the eight PC cards optionally plugged into the rear of the unit. See Figure 2-6.

On (ON) LEDs

The ON LEDs are green. They are the first LEDs next to the modem numbers on the front panel. They indicate whether or not the modem is connected correctly and/or recognized by the MAX 200Plus. When this LED is ON, the MAX 200Plus recognizes that the modem has been inserted and is ready to receive data.

A flashing ON LED indicates that the MAX 200Plus does not recognize the modem but is going to attempt to receive data through it anyway, using Hayes-compatible modem commands. This happens only when the modem is not on the approved list or is malfunctioning. At this point you may eject the questionable modem or let the MAX 200Plus attempt to receive data through it. For a complete list of modems supported by the MAX 200Plus, refer to the Readme file on the MAX 200Plus Console Installation diskette.

Carrier Detect (CD) LEDs

The Carrier Detect LEDs are red. They are the second set of LEDs in the rows of four next to the modem numbers on the front panel. These LEDs turn on when a connection has been made from an outside phone line. They remain lit until the remote party is disconnected from the line.

Receive Data (Rx) LEDs

The Receive data LEDs are yellow. They are the third LEDs in the rows of four next to the modem numbers on the front panel. These LEDs flash when data is being transferred over the phone line and through the associated modem.

Transmit Data (Tx) LEDs

The Transmit data LEDs are yellow. They are the fourth set of LEDs in the rows of four next to the modem numbers on the front panel. These LEDs flash when data is being sent over the phone line through the associated modem.

LED activity and Type III PC cards (ISDN)

On (ON) LEDs

The ON LEDs are green. The ON LED (green) indicates the PC card status. When the Type III PC card completes its Power On Self Test (POST), the lower ON LED LEDs. The upper ON LED lights after the PC card establishes network communication. See Figure 2-6.

Note: Establishing network communication occurs only after you properly configure the PC card. Refer to the *MAX 200Plus Administrator's Guide* to configure a PC card.

Carrier Detect (CD) LEDs

The Carrier Detect LEDs (red) light when a call is in progress. The top LED lights when a B1 channel call is in progress; the bottom LED lights when a B2 channel call is in progress.

Receive Data (Rx) LEDs

The Receive data LEDs are yellow. These LEDs flash when data is being transferred over the phone line and through the associated PC card. The top LED is for the B1 channel; the bottom LED is for the B2 channel.

Transmit Data (Tx) LEDs

The Transmit data LEDs are yellow. These LEDs flash when data is being transferred over the phone line and through the associated PC card. The top LED is for the B1 channel; the bottom LED is for the B2 channel.

Starting up the MAX 200Plus

To finish the hardware portion of the MAX 200Plus installation, turn the MAX 200Plus on by flipping the power switch on the back panel from the down and depressed position to the up and depressed position. The green LED, labeled POWER, on the front panel remains ON as long as the MAX 200Plus is receiving power. If you are using 10BaseT Ethernet, check for link status.

When you power up the MAX 200Plus it runs a self-test. The test lasts about two minutes and checks the internal circuitry to see that everything is functioning properly. During the test the PC card status LEDs flash in a circular pattern, and then the LEDs light one at a time. If an error condition is found, one or more LEDs flash repeatedly.

After the self-test the front panel LEDs light in groups of two from left to right as the software loads. This simulates a thermometer bar indicating the status of the software load. When the software load completes, all the LEDs are ON. This portion of the start-up process takes approximately one minute.

After the software is loaded, it requires decompression. This lasts about one minute and is identified by the front panel LEDs going OFF in groups of two. When the decompression process completes, all LEDs are OFF. This process takes approximately one minute.

Finally, every PC card in the unit is tested. The test begins when all CD LEDs (red) light for all slots, while the unit searches for all PC cards. After the search, only those CD LEDs that have corresponding PC cards installed remain ON. As each PC card passes the test, the red LED turns OFF. If the test fails, the CD LED associated with the PC card that failed remains ON.

For an explanation of error conditions, refer to Appendix A, “Troubleshooting.”

Where to go next

Now that you have installed the MAX 200Plus hardware, proceed to the *MAX 200Plus Administrator's Guide* to learn about configuring the unit.

Troubleshooting

A

This chapter describes some common problems, instructions for diagnosing problems, and some suggestions on how to solve them. It covers the following topics:

PC card problems

This section helps you troubleshoot problems you may experience with getting a PC card to work.

Cable problems

Make sure you are using the correct cable. Ascend recommends that you use the manufacturer's modem cable or ISDN cable provided with your PC card modem or ISDN adapter. Although many cables look alike, you can not be sure that they are wired identically. Also, if you disconnect more than one cable at a time, you may want to label them.

Configuration problems

If you install a modem that is not on the approved modem list, the MAX 200Plus first tries to configure it with a Hayes-compatible setup string. If the MAX 200Plus is still unable to read your PC card, the On LED associated with the PC card slot flashes, indicating that the MAX 200Plus is trying to configure the card.

If it is able to configure the modem, the LED stops flashing and appears solid in about 15 seconds. Open the Port Configuration window in the Console to see if the modem appears on the screen. Once you have defined commands for a specific modem, the MAX 200Plus retains the setup information.

Unit problems

This section helps you troubleshoot problems you may experience with the MAX 200Plus itself.

Number of MAX 200Plus units

You can install as many MAX 200Plus units on a single network as is necessary to accommodate your needs. You can use a single MAX 200Plus

Console to manage multiple MAX 200Plus units. Refer to the *MAX 200Plus Administrators Guide* for details.

Self-test errors

There are three types of errors generated by the MAX 200Plus: non-critical errors which are informational only, critical errors which should be noted but do not limit the MAX 200Plus's ability to function (such as a dead battery), and fatal errors that completely shut down the MAX 200Plus and may require you to contact Ascend Customer Service for repair.

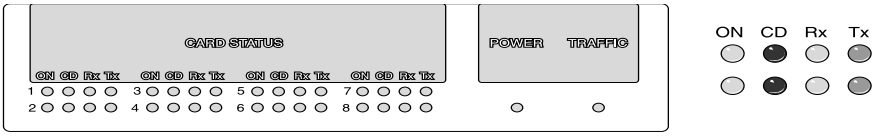

Figure 2-7. MAX 200Plus error LEDs

There are 32 possible errors displayed by the PC card LEDs on the MAX 200Plus's front panel. The upper left hand corner LED (PC card 1 On) is error 0. LEDs are then counted horizontally from left to right 0-15. The bottom row of LEDs are numbered, starting with the lower left hand corner LED (PC card 5 ON) as 16, horizontally from left to right 16-31. If errors occur, they appear on the front panel of the MAX 200Plus during startup. Flashing LEDs are normal while PC Cards are in use.

Errors only appear during the startup sequence. Errors generally do not occur individually, but more commonly in groups of associated errors. We recommend that you contact Ascend Customer Service, should an error appear, and use the numbers in error numbers for reference when you contact us.

Table 2-3. LED errors

LED	Severity	Description
0	Fatal	CPU error
1	Fatal	DRAM error

Table 2-3. LED errors (Continued)

LED	Severity	Description
2	Non-Critical	SIMM DRAM error
3	Critical	Battery error
4	Fatal	SRAM - Compare
5	Fatal	SRAM error
6	Critical	SRAM - Compare error when restored from DRAM
7	Fatal	Timer error
8	Critical	Serial Port error
9	Fatal	DMA Controller error
10	Fatal	External Timer error (Intel 82C54)
11	Fatal	Read Register error
12	Critical	Real Time Clock error
13	Fatal	MACE error (AMD 79C940)
14	Fatal	PCIC error (Intel 82365)
15	Non-Critical	PC card 0 error (Right Top)
16	Non-Critical	PC card 1 error (Right Bottom)
17	Non-Critical	PC card 2 error (2nd from Right Top)
18	Non-Critical	PC card 3 error (2nd from Right Bottom)

Table 2-3. LED errors (Continued)

LED	Severity	Description
19	Non-Critical	PC card 4 error (2nd from Left Top)
20	Non-Critical	PC card 5 error (2nd from Left Bottom)
21	Non-Critical	PC card 6 error (Left Top)
22	Non-Critical	PC card 7error (Left Bottom)
23	Non-Critical	PCMCIA A error (Front Top)
24	Non-Critical	PCMCIA B error (Front Bottom)
25	Fatal	Interrupt error
26	n/a	n/a
27	n/a	n/a
28	n/a	n/a
29	n/a	n/a
30	n/a	n/a
31	n/a	n/a

Hardware specifications

B

This appendix details the hardware specifications of the MAX 200Plus.

Operating environment

Operating Temperature:	10° to 40° Centigrade
	50° to 104° Fahrenheit
Storage Temperature:	10° to 40° Centigrade
	50° to 104° Fahrenheit
Relative Humidity:	5% to 95% (non-condensing)
Altitude:	0 to 12,000 feet

Power

Internal 100-265 VAC, 47-63 Hz Single Phase Input Current, 1.2A @100 VAC or .5A @220

AC power (110 AC or 220 VAC)

Physical description

The MAX 200 Plus base system weighs 7.25 pounds (3.26 kg) and has these dimensions:

17.625" x 2.0" x 8.25" (44.75 cm x 5.08 cm x 20.95 cm).

Back panel components

The following table lists the back panel components of the MAX 200Plus, such as connectors, ports, and slots.

Table 2-4. Back panel connectors, ports, and slots

Component	Function
Power connector.	AC power (110 AC or 220 VAC)
Ethernet ports, 10Base 5 AUI and 10BaseT RJ-45	Single Ethernet interface. Ethernet port/protocol selected through software command.
Eight dual-height PCMCIA Type II slots (each pair of dual-height Type II slots can be used as one Type III slot)	Expansion modules can supply modems or BRI connectivity. Refer to the PCMCIA card manufacturer's specifications for details.

Matching Slot Numbering with the Console

C

Overview

The slots on a MAX 200Plus units are numbered in either of two ways:

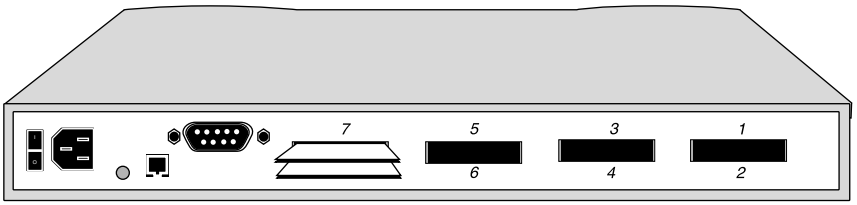

Figure C -1. MAX 200Plus back panel with vertical slot numbering

or

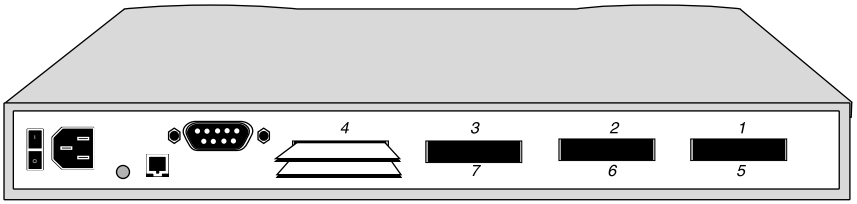

Figure C -2. MAX 200Plus back panel with horizontal slot numbering

If you launch the MAX 200Plus Console and the numbering does not appear on the Console as it is on the MAX 200Plus, you can create a MAX200.INI file to enable the Console to accurately reflect the numbering on the MAX 200Plus.

Note: This does *not* affect the functionality of the MAX 200Plus.

Creating your MAX200.INI file

1. On your PC, go to the directory where you have installed the MAX 200Plus Console. For example, if you have installed the Console into the \ascend\max200 subdirectory on your PC, enter

   ```
   c:\> cd \ascend\max200
   ```

   and hit `<return>` to move to that subdirectory.

2. Create a text file named MAX200.INI.

3. If your MAX 200Plus is numbered as in Figure C-1, add the following two lines to the file:

   ```
   [slots]
   map=no
   ```

4. If your MAX 200Plus is numbered as in Figure C-2, add the following two lines to the file:

   ```
   [slots]
   map=yes
   ```

5. Save the text file and exit the text editor.

   If you use the MAX VT100 user interface to configure your MAX 200Plus, and your unit is numbered as shown in Figure C-2, note the following:

   Menu 10-000 controls the slot numbered 1.

   Menu 20-000 controls the slot numbered 5.

   Menu 30-000 controls the slot numbered 2.

   Menu 40-000 controls the slot numbered 6.

   Menu 50-000 controls the slot numbered 3.

   Menu 60-000 controls the slot numbered 7.

Menu 70-000 controls the slot numbered 4.

Menu 80-000 controls the slot numbered 8.

Also, BRI cards, which occupy two slots, are displayed in the lower slot.

For more information about the VT100 user interface, refer to the *MAX 200Plus Supplemental Documentation Set.*

Glossary

10BaseT cable—An Ethernet cable system using unshielded twisted-pair wiring with RJ-45 eight-conductor plugs at each end. The RJ-45 plug connects into the RJ-45 port on the MAX 200Plus back panel. 10BaseT cable standards are defined by the IEEE 802.3 standard.

AppleTalk—The Apple Computer network system. AppleTalk is a set of network protocols that control network file access, data transmission, and other functions. AppleTalk can be implemented on a variety of cable systems, including LocalTalk, Ethernet, and Token-Ring.

AUI connector—The Attachment Unit Interface (AUI) is a DB-15 connector that connects to a transceiver on thick Ethernet, twisted-pair, fiber-optic, or other cable systems.

AUI port—The Attachment Unit Interface (AUI) is a DB-15 port that connects to a transceiver on cable systems, such as thick Ethernet, twisted-pair, or fiber-optic cable systems.

Carrier Detect—The Carrier Detect LEDs turn on when a connection has been made from an outside phone line. They remain lit until the remote party is disconnected from the line.

hot-swappable—The MAX 200Plus platform allows you to insert and eject PCMCIA cards without shutting off system power. This is called hot-swapping.

PCMCIA—The Personal Computer Memory Card International Association, a non-profit trade and standards association that establishes and maintains the PC Card specifications.

PC card—Credit-card sized computer enhancement hardware whose specifications are defined by the PCMCIA.

Receive data—The Receive data lights turn on when data transfers over the phone line and through an associated modem. This light blinks to show activity through the modem.

RJ-45 connector—The connector on one end of a 10BaseT cable that fits into the RJ-45 port on the back panel of MAX 200Plus.

RJ-45 port—The port on the back panel of MAX 200Plus that accepts the RJ-45 plug on one end of a 10BaseT cable. It is the port used to connect MAX 200Plus to a twisted-pair network.

thick Ethernet—Thick Ethernet refers to the industry-standard Ethernet cable or any other cable that uses the IEEE 802.3 Media Access Unit (MAU) interface.

Transmit data —The Transmit data lights flash when data is being sent over the phone line.

twisted-pair cable—A cable used for both network communications and telephone communications. Also called 10BaseT.

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