



# Setting Up and Testing the MAX Hardware

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- [Connecting to the LAN](#)
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- [Connecting the MAX to the E1 Line](#)
- [Interpreting the MAX LEDs](#)
- [Starting up the MAX](#)

## Planning the hardware installation

This section explains what you need before you install the MAX hardware.

### What you need before you start

Before you install the MAX, make sure have these items:

- A suitable location to install the MAX hardware.
- If you are rack-mounting the MAX hardware, make sure you have a one-unit air gap for cooling (approximately 4 inches) between the MAX and other rack-mount hardware.
- One or more active line(s), with at least one line set for bidirectional calling.

Bidirectional calling allows you to test the MAX hardware, by having the MAX dial out on one channel and answer on another channel.

- If applicable, one or more active BRI lines.
- If you have an Ethernet interface, you need the appropriate cables and connectors to set up and test your Ethernet LAN connection.

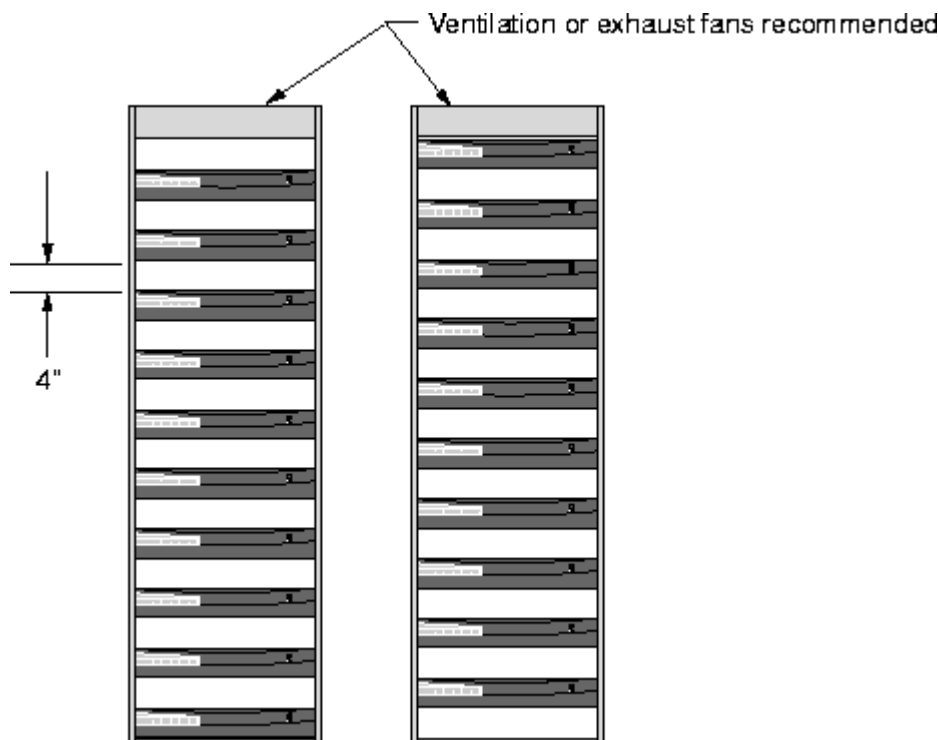
- A locally-connected host or workstation that can PING or TELNET the MAX.
- A VT100 terminal or a communications package that supports VT100 emulation installed on your workstation and an Ethernet interface.
- A remote Ascend or compatible unit to which you can PING or TELNET over a dial-up Point-to-Point Protocol (PPP) connection.
- If applicable, expansion modules that were shipped separately.
- If applicable, a hand-held Palmtop terminal and associated cable less than 10 feet (3 meters) in length.

### Guidelines for installing digital modems

- The Series56 architecture requires that all modem modules within a MAX chassis be homogeneous. That is, Series56 modules may not be mixed with non-Series56 digital modem modules.
- The Series56 architecture also requires that the modem density be homogeneous. Modem modules with mixed densities (for example, 8-port and 12-port modem modules) cannot be combined in a single chassis.
- The MAX can support a total of 72 digital modems.

### Guidelines for installing MAX units in a rack

This section provides installation guidelines for installing MAX units in a rack. [Figure 2-1](#) illustrates an example installation.



**Figure 2-1.** Installing MAX units in a rack.

- Leave approximately 4" vertical space between MAX units. This allows for air flow between units and leaves room for handling the MAX units if they need to be removed.
- Leave approximately 1 foot between the racks of MAX units for air flow dissipation.
- Stair step MAX in adjacent open racks.

The MAX intake fans are on the right (as viewed from the front); the exhaust fans on the left. Stair-stepping the MAX units in the racks ensure that hot air from one MAX is not being blown into adjacent MAX units.

- Ensure adequate cooling in the room.
  - Racks with open sides are recommended because the MAX fans vent on the side of the unit.
  - In enclosed racks make sure there are openings in the floor underneath each cabinet to allow the air conditioning up into the cabinet.
  - Exhaust fans at the top of the cabinet are recommended but not required. At a minimum the cabinets must be ventilated at the top.

If you ordered MAX expansion cards separately, continue with the next section. If all of your expansion cards are preinstalled, skip to the section [Setting up the hardware](#).

## Inserting an expansion card



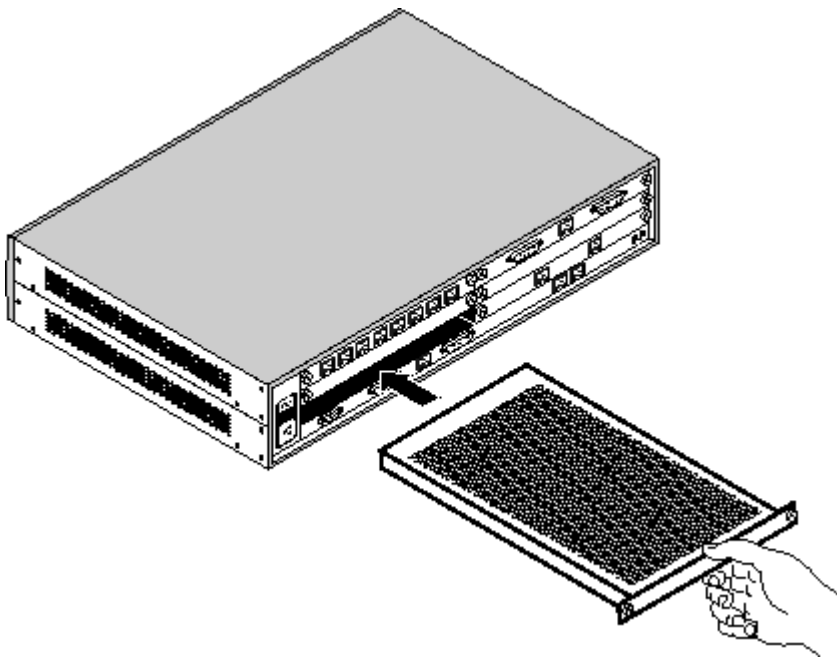
**Warning:** When installing any equipment, make sure to use proper procedures for static electricity, such as using a grounding mat and a wrist strap.

If your MAX package includes expansion modules that are not already installed in your MAX, insert the modules now. Follow these steps:

1. Make sure the MAX power is off and the power cord is unplugged.

**Warning:** Failure to turn off the MAX power and unplug the power cord could result in injury to you.

- Hold the expansion card with the network ports facing you and insert the card into a back panel slot as shown in [Figure 2-2](#). Do not grab the slot cards from both ends. Make sure you insert the card into the guides within the same plane.

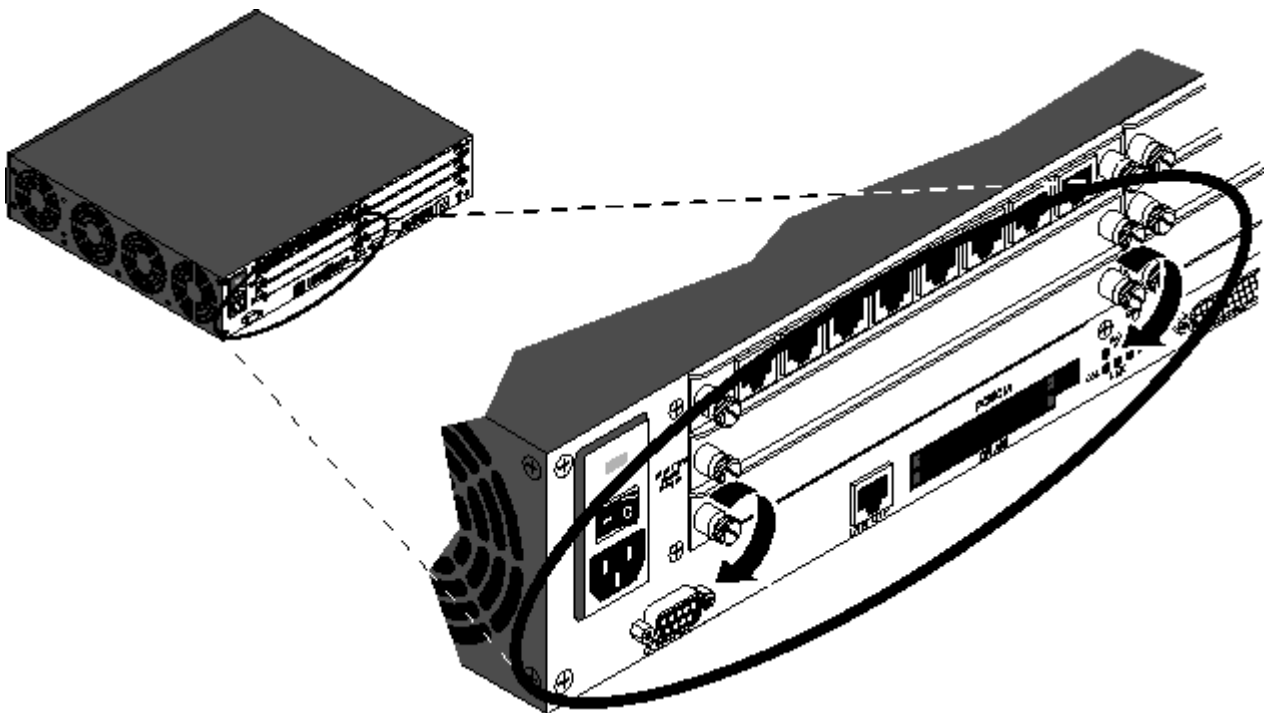


*Figure 2-2. Inserting an expansion card into a MAX slot*

1. Push the card along the internal guides until it is secure. The face plate of the expansion card should touch the back panel of the MAX.

**Caution:** Do not force the expansion card into the slot. Doing so can damage the card or slot connector.

- Tighten the screws on either side of the module as shown in the following figure.



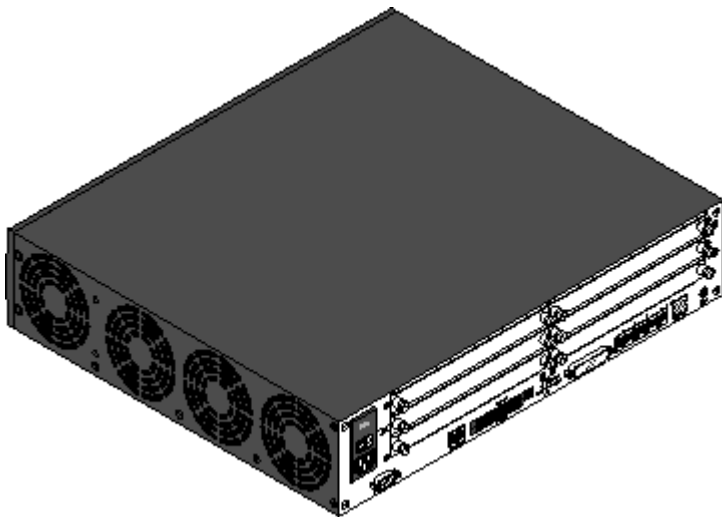
*Figure 2-3. Tightening slot card thumbscrews*

Now you are ready to set up the hardware.

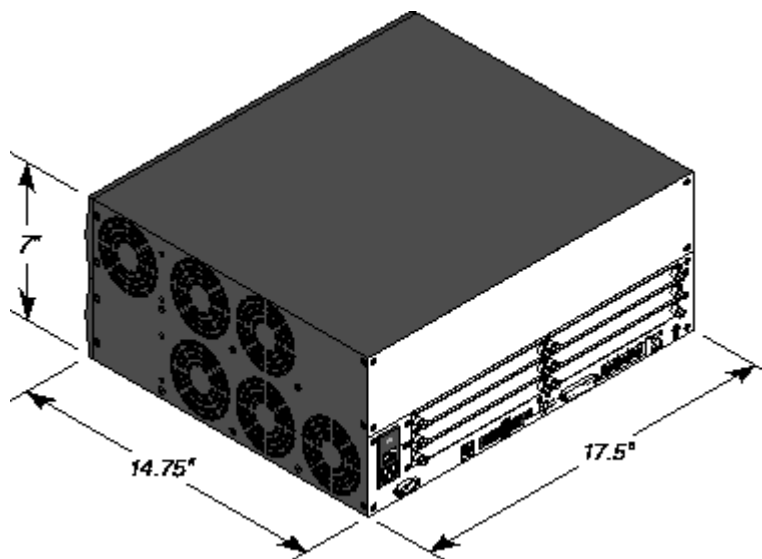
## Setting up the hardware

Before you set up the MAX hardware, you need to make sure you have the appropriate space. You can install the MAX in a 19-inch or 23-inch rack.

The following illustrations show the dimensions of both base MAX units—the single power supply unit and the redundant power supply unit.



*Figure 2-4. Dimensions of the single power supply unit*

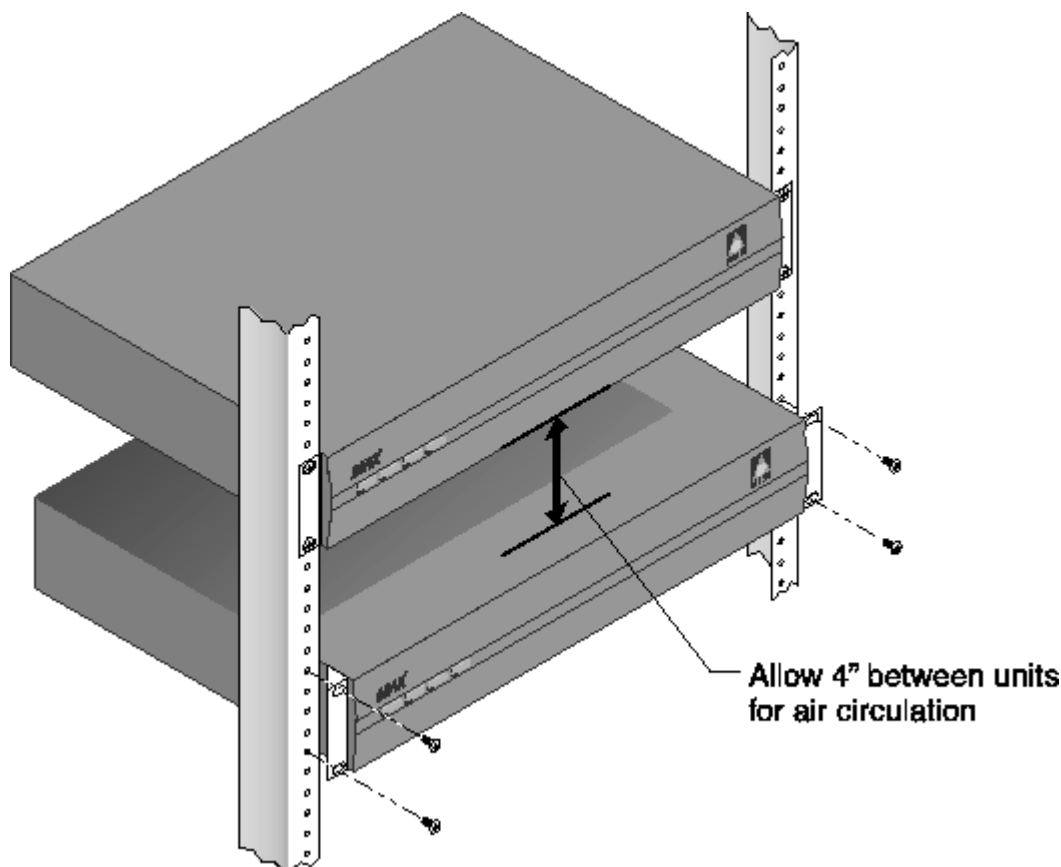


*Figure 2-5. Dimensions of the redundant power supply unit*

To set up the MAX hardware, follow these steps:

1. If you are installing the MAX in a rack, insert the unit in the rack and secure it. See [Figure 2-6](#).

If you are not rack-mounting the MAX, place it where you can have full access to the front and back panels.



*Figure 2-6. Mounting the MAX in a rack*

1. Connect your VT100 terminal or workstation with VT100 terminal emulation software to the MAX Control port, using the null-modem cable provided in your package.
2. If applicable, connect your hand-held Palmtop terminal to the Palmtop port.

## Connecting to input power

1. Plug your power cord into your AC or DC power source. ([Figure 1-1](#) and [Figure 1-3](#) display the power sources and [Appendix B, "MAX Technical Specifications "](#) lists input power requirements.)

## Connecting to the LAN

To connect to the LAN:

1. Connect your Ethernet LAN cable to the Ethernet interface on the MAX.
2. The MAX 6000 supplies a 10Base-T Ethernet port. You will need an adapter if you have another type of Ethernet LAN.

## Connecting the MAX to the T1 Line

To connect your MAX to the T1 line:

1. Connect the MAX either directly to the T1/PRI line or through other network interface

equipment.

**Note:** To connect to the demarcation point, where the T1/PRI line's metallic interface connects to other equipment, the MAX T1/PRI ports must be configured to utilize its internal CSUs. Otherwise, external CSUs or other network (WAN) interface equipment must be installed between the MAX and the demarcation point.

Enable the internal CSU by setting the Net/T1 > Line Config > Line *N* > Front End parameter to CSU. Disable the internal CSU by setting Front End to DSX.

2. Inform your T1/PRI service provider that your equipment is connected, so they can bring up the line.

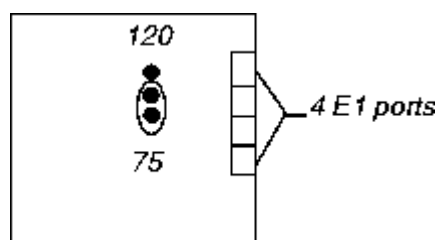
Now that you have connected the MAX, you are ready to learn about the LEDs. Refer to [Interpreting the MAX LEDs](#).

## Connecting the MAX to the E1 Line

To connect your MAX to the E1 line:

1. Use a cable that is specifically constructed for transmission of E1/PRI signals (CCITT G700 series recommended).
2. The MAX can connect to any DPNSS access point on a Private Branch Exchange (PBX) or directly to E1 digital services. The MAX can also connect to G.704 framed leased (non-switching) services for 75 Ohm. (Use cable 2510-0272-001 with 75 Ohm E1 lines.)

When installing the E1 line, the screen of the transmit and receive coaxial cable must be earthed at one end of the line only. Links (jumpers) inside the MAX chassis are provided on the MAX to earth the coaxial screens. The default position of the grounding links on the network line interface, when used with coaxial cable adapter, is on the transmit side (Tx) for 1680 kbps network operations.



**Figure 2-7.** One set of links for each E1 port

For a daisy chain connection of the MAX E1/PRI unit, only line 1 needs an earth link (jumper), as line 1 is the only port connected to the telecommunications network.

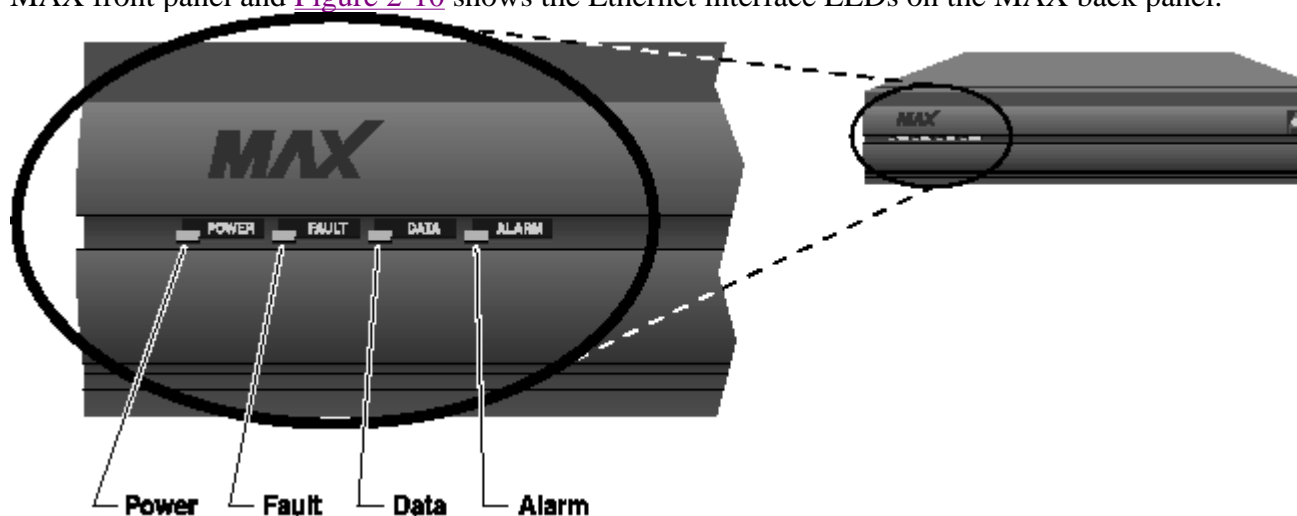
- Connect your MAX to the E1 PRI network interface (TA) equipment supplied by your PTT.

The maximum distance between the E1/PRI WAN interface equipment and the MAX should not introduce attenuation of more than 6db, when measured at half the maximum data rate (1024 kbps). Also, the cable must have a root F characteristic.

Now that you have connected the MAX, you are ready to learn about the LEDs.

## Interpreting the MAX LEDs

Before you start up the MAX, you need to understand the LEDs on the MAX. [Figure 2-8](#) shows the location of LEDs on the front panel, [Figure 2-9](#) shows the location of the LEDs on the redundant MAX front panel and [Figure 2-10](#) shows the Ethernet interface LEDs on the MAX back panel.

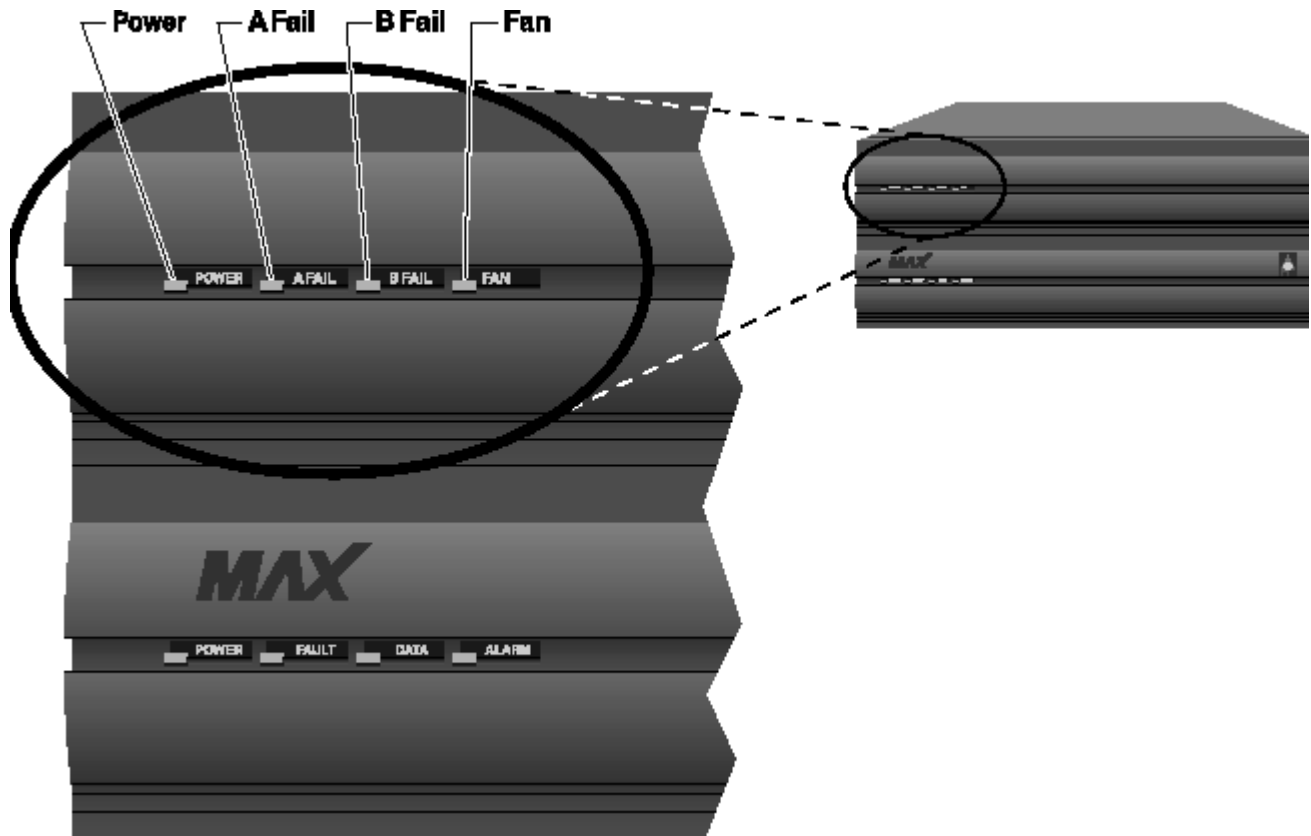


*Figure 2-8. Location of the MAX LEDs*

[Table 2-1](#) lists and describes each LED.

*Table 2-1. MAX LEDs*

LED	Description
Power	This LED is on when the MAX power is on.
Fault	This LED is on in one of two cases-either a hardware self-test is in progress or there is a hardware failure. When a hardware self-test is in progress, the LED is on. If any type of hardware failure occurs, the LED flashes. If the failure is isolated to a expansion card, the MAX may continue functioning without the expansion card.
Data	This LED is on when calls are active.
Alarm	This LED is on when there is a WAN alarm or a trunk is out of service, such as during line loopback diagnostics. WAN alarms include Loss of Sync, Red Alarm, Yellow Alarm, and All Ones (or AIS).



*Figure 2-9. Location of the MAX LEDs on the redundant MAX*

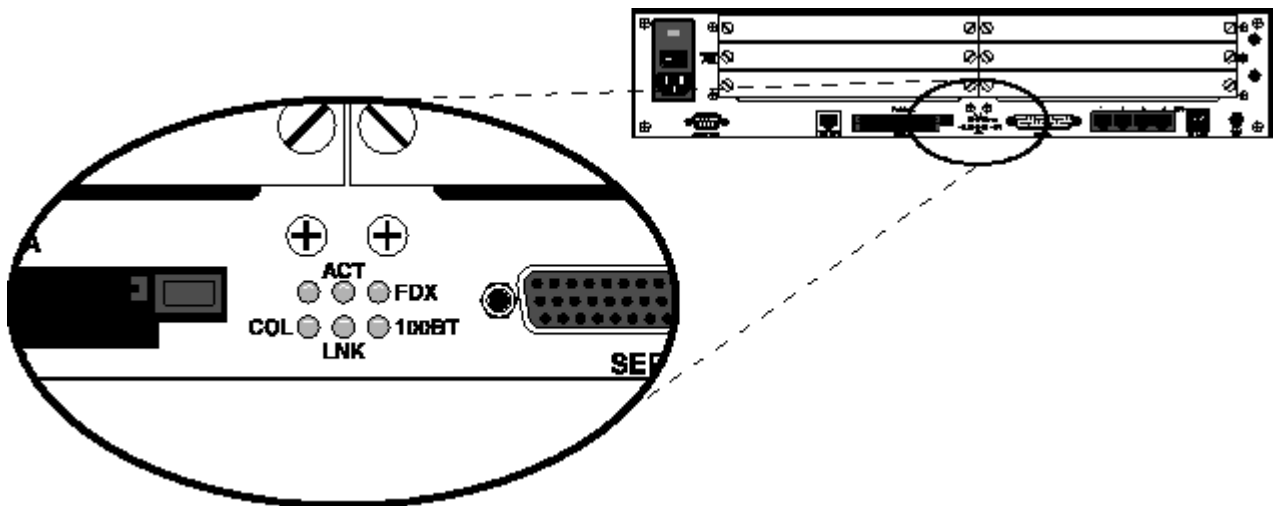
*Table 2-2. Redundant MAX LEDs*

LED	Description
Power	This LED is on when the redundant MAX power supply is on.
A Fail	This LED is on only when there is a failure on power supply A, (if one or more of the voltages on the A side has failed: +5, +3.3, +12, -12, -5.)
B Fail	This LED is on only when there is a failure on power supply B, (if one or more of the voltages on the B side has failed: +5, +3.3, +12, -12, -5.)
Fan	This LED is on when the fans are functioning properly (if +12 VDC from either A or B is good.) This LED is off when there is a fan failure.

[Table 2-2](#) lists and describes each LED.

## MAX back panel

The MAX back panel includes the following LEDs that display the status of the Ethernet interface:



**Figure 2-10.** Ethernet interface LEDs on MAX back panel

**Note:** The Classic MAX back panel shows similar LEDs on the Ethernet expansion card if one is installed. On the Classic MAX, there is one LED for each possible Ethernet interface (10BaseT, and COAX (10Base2), which are lit when the interface is in use. The ACT and COL LEDs are the same as those on the MAX 6000 ([Table 2-3](#)).

The Ethernet interface LEDs are described in [Table 2-3](#).

**Table 2-3.** Ethernet interface LEDs on back panel

LED	Description
ACT (Activity)	This LED is on when the MAX is detecting activity (network traffic) on its Ethernet interface.
COL (Collisions)	This LED is on when the MAX detects packet collisions on the Ethernet.
FDX	When this LED is on it indicates full duplex on the Ethernet.
100ST	When this LED is on, it indicates 100BT; when it is off, it indicates 10BT.
LINK (Link integrity)	This LED is on when the Ethernet interface is functional.

Now that you are familiar with the MAX LEDs, you are ready to start up the MAX.

## Starting up the MAX

To start up the MAX, follow these steps:

1. If you are using a PC, set your terminal emulation package in your communications software as follows:
  - 9600 bps
  - 8 data bits
  - No parity
  - 1 stop bit



70-000 Empty

80-000 Empty

Continue with [Chapter 3, "Quickstart,"](#) to get your MAX up and running with a basic configuration.

Continue with [Chapter 4, "Navigating the User Interface,"](#) to learn how to navigate the MAX user interface before performing more advanced configuration as explained in *MAX 6000 Series ISP & Telecommuting Configuration Guide*.

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