

Power Supply and Series56 II Digital Modem Card Upgrade Guide

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This document describes the Series56 II Digital Modem cards and explains the power requirements and supported configurations for Series56 and Series56 II cards. It also explains how to replace the existing power supplies with the high-output power supplies and how to install and configure the Series56 II cards. It also provides the specifications for the high-output power supplies.

Caution: Read this document in its entirety before installing Series56 II cards or high-output power supplies. Improper installation of the MAX TNT power supplies could damage the unit.

Introduction

The Series56 II cards provide 48 modems in a single-height slot card that can terminate both modem and HDLC calls. Note, however, that the Series56 II card can only process calls that use a single DS0. This differs from existing HDLC cards, which can process datastreams that span multiple DS0s of the same T1 or E1 interface. Frame Relay connections cannot use the Series56 II card. They must use HDLC cards.



Figure 1. Series56 II Digital Modem card

Installing Series56 and Series56 II cards in the same chassis

Although Series56 II cards are compatible with existing Series56 cards and can be installed in the same chassis, the Series56 II cards consume more power. If you install more than 12 Series56 II cards in the MAX TNT, you must replace the existing power supply with a new high-output power supply. However, Ascend recommends that if you install any Series56 II cards, you should replace the existing power supply with a new high-output power supply.

If you are using both Series56 II and existing modem cards and choose not to install a highoutput power supply, see Table 1 for a list of supported configurations.

Number of Series56 II cards	Number of existing modem cards
1	1 to 6
2	1 to 6
3	1 to 5
4	1 to 5
5	1 to 4
6	1 to 4
7	1 to 3
8	1 to 3
9	1 or 2
10	1 or 2
11	1
12	1

 Table 1.
 Supported Series56 and Series56 II configurations with existing power supplies

Number of Series56 II cards	Number of existing modem cards
13	0
14	0

Table 1. Supported Series56 and Series56 II configurations with existing power supplies

Before you begin

Caution: Before installing the high-output power supply, consider the following:

- The high-output power supply cannot be hot-swapped with existing power supplies. You must power down the MAX TNT to replace the power supplies.
- The high-output power supply cannot be used in redundant configurations with existing power supplies. Attempting to mix-and-match different power supplies will invalidate associated warranties and claims of consequential damages.
- The high-output power supply is 100% plug-in compatible with the existing MAX TNT power supplies. However, the high-output power supply is not compatible with the old power supply, so new power supplies must be installed in pairs.
- The capacitor card installed beneath the power supplies provides redundancy to existing MAX TNT power supplies. Although this card is not used for the high-output power supplies, this card must be left in place when installing a high-output power supply, as it provides EMI protection. If you have a new MAX TNT unit, there is a plate in this space for EMI purposes.

Identifying the new power supply

New MAX TNT units will have the high-output power supplies pre-installed. Figure 2 shows how to identify the new high-output AC power supply.



Old power supply

New power supply

Figure 2. Identifying the high-output AC power supply

Figure 3 shows how to identify the new high-output DC power supply.









Figure 3. Identifying the high-output DC power supply

Installing a high-output power supply

To install a high-output power supply, proceed as follows:

- 1 Power down the MAX TNT.
- 2 If you have a DC power supply unit, remove the terminal block wires.
- 3 Unscrew the power supply units from the MAX TNT chassis as shown in Figure 4.



Figure 4. Unscrewing the power supply

Warning: Do not remove the power supply capacitor card located below the MAX TNT power supplies. Doing so will disrupt airflow within the MAX TNT chassis.

4 Remove the existing power supplies as shown in Figure 5.



Figure 5. Removing the power supply

5 Gently insert the new power supply as shown in Figure 6.



Figure 6. Inserting the power supply

6 Tighten the power supply lockscrews as shown in Figure 7.



Figure 7. Tightening the power supply lockscrews

7 If you have a redundant power supply, repeat steps 2 through 6 for the remaining power supply.

Connecting the MAX TNT AC power supply

To apply AC power to the MAX TNT, plug the power cord into the MAX TNT power supply socket.

Warning: Models with AC power inputs are intended for use with a three-wire grounding type plug—a plug that 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.

Connecting the MAX TNT DC power supply

The MAX TNT DC power supply requires 3 inputs: -48 Vdc, Return (-48 Vdc return) and earth/chassis ground. -48V and Return are isolated from ground.

Solid copper (12 AWG) should be used to connect the power supply terminal block ground to the facility's ground. If the MAX TNT is fed from an isolated supply, you must supply a solid ground to earth via copper rods. This ground must be less than 5 Ohms.

A single drop to all MAX TNT units on one rack is acceptable. An example of wiring the terminal block is shown in Figure 8.

Warning: Before installing wires to the MAX TNT unit's DC power terminal block, verify that these wires are not connected to any power source and that the MAX TNT power supply switch is in the Off (down) position. Installing live wires (that is, wires connected to a power source) is hazardous.



Figure 8. Connecting to DC power

Installing the Series56 II card

Note: All MAX TNT slot cards are hot-swapable, meaning that you can safely insert or remove cards while the MAX TNT power is on.

To install the Series56 II card:

1 Hold the slot card with the thumbscrew facing you and insert the card into the open slot as shown in Figure 9.



Figure 9. Inserting a slot card into a MAX TNT slot

2 Push the card along the internal card guides until it is secure. The panel of the slot card should touch the back panel of the MAX TNT.



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

3 Tighten the thumbscrew on the right side of the card. Then tighten the thumbscrew on the left side of the card, as shown in Figure 10.



Figure 10. Tightening slot card thumbscrews

Configuring the Series56 II card

Configuring the Series56 II card is identical to Series56 card configuration. For information on configuring Series56 II cards, see the *MAX TNT Hardware Installation Guide*.

Identifying the Series56 II card

The output of the Show command identifies the Series56 II card as csmx-card, as in the following example:

```
admin>show
Shelf 1 ( standalone ):
{ shelf-1 slot-14 0 } UP csmx-card
```

The Dircode command displays the file for the Series56 II card in the flash file system:

```
admin>dircode
Flash card code directory:
Card 1, directory size 16
csmx-card reg good 427117 Oct 23 21:05 7.0.0
```

Series56 II ports appear in the output of both the HDLC and Modem commands.

Series56 II Call-Route profiles

When you install a Series56 II card, the MAX TNT creates two call route profiles for each channel on the card; one for a digital call and one for a modem call. For example:

admin	>callroute	-d
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device	# s	ource	type	tg	sa	phone
1:14:01/0	0 0:0	0:00/0	voice-call-type	0	0	
1:14:01/0	1 0:0	0:00/0	digital-call-type	0	0	
1:14:02/0	0 0:0	0:00/0	voice-call-type	0	0	
1:14:02/0	1 0:0	0:00/0	digital-call-type	0	0	
1:14:03/0	0 0:0	0:00/0	voice-call-type	0	0	
1:14:03/0	1 0:0	0:00/0	digital-call-type	0	0	
1:14:04/0	0 0:0	0:00/0	voice-call-type	0	0	
1:14:04/0	1 0:0	0:00/0	digital-call-type	0	0	
1:14:05/0	0 0:0	0:00/0	voice-call-type	0	0	
1:14:05/0	1 0:0	0:00/0	digital-call-type	0	0	

Note that in the MAX TNT Call-Route profiles, voice-call-type refers only to a modem call.

Power supply specifications

Table 2 provides the specifications for the MAX TNT DC power supplies.

Table 2. MAX TNT DC high-output power specifications		
Input power	40-60VDC, 35A maximum	
Input connector	3 position, 50A, single row terminal block with 10-32 studs and 11/32" extended hex nuts. Lexan protective cover included.	
Input protection	40A, single pole, single throw magnetic circuit breaker	
Inrush current	400A peak at 60 VDC	
Output connector	DIN M-type connector with 40 A rated high power inserts and 24 signal pins	
Output power	965W Max (+5V at 160A, +3.3V at 8A, +12V at 3A, -12V at 6A, and -5V at 6A) with current sharing on +5V	
Nominal size	10.80" length by 5.58" height by 5.98" width	
Weight	10.5 lbs	
Signals	Power supply present signal, power supply fail signal.	
Controls	Factory preset +5V adjustment pot, remote On/Off switch.	

Protections	Input reverse polarity protection.
	Primary power limiting.
	Overtemperature protection, resetting with hysteresis.
	Self-restarting type overcurrent and over- voltage protection on all outputs.
	Output redundancy diodes on all outputs.
Power circuits	125 kHz single-switch forward isolating down converters with magnetic amplifiers.
Operating humidity	0-90%, non-condensing
Operating ambient	0-50 degrees Celsius

Table 2. MAX TNT DC high-output power specifications (continued)

Table 3 provides the specifications for the MAX TNT AC power supplies.

Table 3. MAX TNT AC high-output power specifications

Input power	90 VAC to 264 VAC, 16 A maximum during normal operation at 90VAC input
Input connector	IEC 320 20A/250Vac
Inrush current	40A peak at 115 VAC and 80A peak at 230 VAC
Output connector	DIN M-type connector with 40 A rated high power inserts and 24 signal pins
Output power	965W Max (+5V at 160A, +3.3V at 8A, +12V at 3A, -12V at 6A, and -5V at 6A)
Nominal size	10.80" length by 5.58" height by 5.98" width
Weight	12 lbs
Signals	Power supply present signal, power supply fail signal.
Protections	Input undervoltage shutdown.
	Instantaneous input power limiting and output overvoltage protection on all power processors.
	Input and output overtemperature protection.
	Overcurrent protection on all outputs.

uble 5. MAA INT AC high-bul	pui power specifications (continuea)
Operating humidity	0-90%, non-condensing
Operating ambient	0-50 degrees Celsius

 Table 3.
 MAX TNT AC high-output power specifications (continued)