ADTRAN

NetVanta 5305
Hardware Installation Guide

4200990L1	**NetVanta 5305 Chassis**
4200990L2	**NetVanta 5305 Chassis with Enhanced Feature Pack**
1200832L1	**NetVanta 5305 T3 Wide Module**
1200934L1	**NetVanta HSSI Wide Module**
1200843L1	**NetVanta Octal T1/E1 Wide Module**
1200840L1	**NetVanta 5305 AC Power Supply**
4200368L3	**NetVanta 5305 Enhanced Feature Pack (VPN Upgrade)**

61200990L1-34C
July 2004

Trademarks

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To the Holder of this Manual

The contents of this manual are current as of the date of publication. ADTRAN reserves the right to change the contents without prior notice.

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Conventions

| NOTE | *Notes provide additional useful information.* |

| CAUTION | *Cautions signify information that could prevent service interruption.* |

| WARNING | *Warnings provide information that could prevent damage to the equipment or endangerment to human life.* |

Safety Instructions

When using your communications equipment, please follow these basic safety precautions to reduce the risk of fire, electrical shock, or personal injury:

1. Do not use this product near water such as a bathtub, wash bowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

2. Avoid using a telephone (other than a cordless-type) during an electrical storm. There is a remote risk of shock from lightning.

3. Do not use a telephone to report a gas leak in the vicinity of the leak.

4. Use only the power cord, power supply, and/or batteries indicated in the manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for special disposal instructions.

Save These Important Safety Instructions

Affidavit Requirements for Connection to Digital Services

- An affidavit is required to be given to the telephone company whenever digital terminal equipment (DTE) without encoded analog content and billing protection is used to transmit digital signals containing encoded analog content intended for eventual conversion into voiceband analog signals and transmitted on the network.

- The affidavit shall affirm that either no encoded analog content or billing information is being transmitted or that the output of the device meets Part 68 encoded analog content or billing protection specifications.

- The end user/customer will be responsible for filing an affidavit with the local exchange carrier when connecting unprotected customer premise equipment (CPE) to 1.544 Mbps or subrate digital services.

Until such time as subrate DTE is registered for voice applications, the affidavit requirement for subrate services is waived.

Affidavit for Connection of Customer Premises Equipment
to 1.544 Mbps and/or Subrate Digital Services

For the work to be performed in the certified territory of _____ (telco name)

State of _____

County of _____

I, _____ (name), _____ (business address),

_____ (telephone number) being duly sworn, state:

I have responsibility for the operation and maintenance of the terminal equipment to be connected to 1.544 Mbps and/or _____ subrate digital services. The terminal equipment to be connected complies with Part 68 of the FCC rules except for the encoded analog content and billing protection specifications. With respect to encoded analog content and billing protection:

( )   I attest that all operations associated with the establishment, maintenance, and adjustment of the digital CPE with respect to analog content and encoded billing protection information continuously complies with Part 68 of the FCC Rules and Regulations.

( )   The digital CPE does not transmit digital signals containing encoded analog content or billing information which is intended to be decoded within the telecommunications network.

( )   The encoded analog content and billing protection is factory set and is not under the control of the customer.

I attest that the operator(s)/maintainer(s) of the digital CPE responsible for the establishment, maintenance, and adjustment of the encoded analog content and billing information has (have) been trained to perform these functions by successfully having completed one of the following (check appropriate statements):

( )   A.   A training course provided by the manufacturer/grantee of the equipment used to encode analog signals; or

( )   B.   A training course provided by the customer or authorized representative, using training materials and instructions provided by the manufacturer/grantee of the equipment used to encode analog signals; or

( )   C.   An independent training course (e.g., trade school or technical institution) recognized by the manufacturer/grantee of the equipment used to encode analog signals; or

( )   D.   In lieu of the preceding training requirements, the operator(s)/maintainer(s) is (are) under the control of a supervisor trained in accordance with _____ (circle one) above.

I agree to provide _____ (telco's name) with proper documentation to demonstrate compliance with the information as provided in the preceding paragraph, if so requested.

_____Signature

_____Title

_____ Date

Transcribed and sworn to before me

This _____ day of _____, _____

_____
Notary Public

My commission expires:

_____

FCC regulations require that the following information be provided in this manual:

1. This equipment complies with Part 68 of FCC rules and requirements adopted by ACTA Each registered interface has a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, provide this information to the telephone company.

2. If this equipment causes harm to the telephone network, the telephone company may temporarily discontinue service. If possible, advance notification is given; otherwise, notification is given as soon as possible. The telephone company will advise the customer of the right to file a complaint with the FCC.

3. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of this equipment. Advance notification and the opportunity to maintain uninterrupted service are given.

4. If experiencing difficulty with this equipment, please contact ADTRAN for repair and warranty information. The telephone company may require this equipment to be disconnected from the network until the problem is corrected or it is certain the equipment is not malfunctioning.

5. This unit contains no user-serviceable parts.

6. This equipment is designed to connect to the telephone network or premises wiring using an FCC compatible modular jack, which is compliant with Part 68 and requirements adopted by ACTA.

7. The following information may be required when applying to the local telephone company for leased line facilities:

Part Number	Registration Number	Service Type	REN/SOC	FIC	USOC
1200843L1	US: HDCDENAN1200843L1	1.544 Mbps - SF 1.544 Mbps - SF and B8ZS 1.544 Mbps - ESF 1.544 Mbps - ESF and B8ZS	6.0N	04DU9-BN 04DU9-DN 04DU9-1KN 04DU9-1SN	RJ-48C

8. The REN is useful in determining the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most areas, the sum of the RENs of all devices should not exceed five. To be certain of the number of devices you may connect to your line as determined by the REN, call your telephone company to determine the maximum REN for your calling area.

9. This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.

Federal Communications Commission Radio Frequency Interference Statement

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 frequencies. 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.

> **WARNING**   *Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

Industry Canada Compliance Information

Notice: The Industry Canada label applied to the product (identified by the Industry Canada logo or the "IC:" in front of the certification/registration number) signifies that the Industry Canada technical specifications were met.

Notice: The Ringer Equivalence Number (REN) for this terminal equipment is supplied in the documentation or on the product labeling/markings. The REN assigned to each terminal device indicates the maximum number of terminals that can be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the RENs of all the devices should not exceed five (5).

Canadian Emissions Requirements

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioelectriques applicables aux appareils numériques de Class A prescrites dans la norme sur le materiel brouilleur: "Appareils Numériques," NMB-003 edictee par le ministre des Communications.

Product Warranty

ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found at www.adtran.com/warranty.

Product Registration

Registering your product helps ensure complete customer satisfaction. Please take time to register your products on line at www.adtran.com. Click *Service and Support* on the top of the page, and then click *Product Registration* under *Support.*

Customer Service, Product Support Information, and Training

ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found at www.adtran.com/warranty.

A return material authorization (RMA) is required prior to returning equipment to ADTRAN. For service, RMA requests, training, or more information, use the contact information given below.

Repair and Return

If you determine that a repair is needed, please contact our Customer and Product Service (CAPS) department to have an RMA number issued. CAPS should also be contacted to obtain information regarding equipment currently in house or possible fees associated with repair.

> CaPS Department   (256) 963-8722

Identify the RMA number clearly on the package (below address), and return to the following address:

> ADTRAN Customer and Product Service
> 901 Explorer Blvd. (East Tower)
> Huntsville, Alabama 35806
>
> RMA # _____

Pre-Sales Inquiries and Applications Support

Your reseller should serve as the first point of contact for support. If additional pre-sales support is needed, the ADTRAN Support web site provides a variety of support services such as a searchable knowledge base, latest product documentation, application briefs, case studies, and a link to submit a question to an Applications Engineer. All of this, and more, is available at:

> http://support.adtran.com

When needed, further pre-sales assistance is available by calling our Applications Engineering Department.

> Applications Engineering   (800) 615-1176

Post-Sale Support

Your reseller should serve as the first point of contact for support. If additional support is needed, the ADTRAN Support web site provides a variety of support services such as a searchable knowledge base, updated firmware releases, latest product documentation, service request ticket generation and trouble-shooting tools. All of this, and more, is available at:

http://support.adtran.com

When needed, further post-sales assistance is available by calling our Technical Support Center. Please have your unit serial number available when you call.

Technical Support   (888) 4ADTRAN

Installation and Maintenance Support

The ADTRAN Custom Extended Services (ACES) program offers multiple types and levels of installation and maintenance services which allow you to choose the kind of assistance you need. This support is available at:

http://www.adtran.com/aces

For questions, call the ACES Help Desk.

ACES Help Desk   (888) 874-ACES (2237)

Training

The Enterprise Network (EN) Technical Training Department offers training on our most popular products. These courses include overviews on product features and functions while covering applications of ADTRAN's product lines. ADTRAN provides a variety of training options, including customized training and courses taught at our facilities or at your site. For more information about training, please contact your Territory Manager or the Enterprise Training Coordinator.

Training Phone   (800) 615-1176, ext. 7500
Training Fax   (256) 963-6700
Training Email   training@adtran.com

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Tables

1.   INTRODUCTION TO THE NETVANTA 5305 SOLUTION

The NetVanta 5305 is a modular multi-service access router designed for corporate office connectivity over frame relay or point-to-point (PPP) networks. The NetVanta 5305 has six modular slots for customizing solutions and runs with the ADTRAN Operating System (ADTRAN OS).

The NetVanta 5305 family includes the NetVanta 5305 Chassis, AC power supply, and system controller. Currently, the NetVanta 5305 family offers an unchannelized T3/FT3 Wide Module for network and data applications, the HSSI Wide Module, the Octal T1 Wide Module, and two integrated auto-sensing 10/100BaseT Ethernet ports for local area network connectivity. For VPN applications using the NetVanta 5305, the enhanced feature pack provides encryption/decryption and security acceleration services. Refer to page 25 for VPN card installation information.

Features and Specifications

The NetVanta 5305 has the following features:

- Unchannelized T3 network access via the T3 Wide Module
- Integrated IP router with bridging
- WAN Protocol: Frame Relay, PPP
- Stateful inspection firewall standard
- RIP Versions 1 and 2, and OSPF routing protocols
- Two integrated 10/100BaseT Ethernet ports (RJ-48C)
- Optional VPN accelerator card
- Network Address Translation - 1:1, 1:many (NAPT), and Reverse NAT
- ADTRAN Operating System Command Line Interface (CLI)
- DHCP client, server, and relay support
- Front panel LEDs
- Redundant power supply option
- 3U rack mountable in a 19" and 23" racks
- Six modular slots
- Chassis dimensions: 5.25" H, 11.625" D, 17" W
- AC power information: 85-250VAC 50/60Hz

This hardware installation guide describes the NetVanta 5305 unit, details basic functionality, gives installation instructions, and lists unit specifications. For more information on a specific application, refer to the quick configuration documents provided on your *ADTRAN OS Documentation* CD. For details on the command line interface, refer to the *AOS Command Reference Guide* (also included on your CD).

Unpack and Inspect the System

Each NetVanta 5305 unit is shipped in its own cardboard shipping carton. Open the carton carefully, and avoid deep penetration into the carton with sharp objects.

After unpacking the unit, inspect it for possible shipping damage. If the equipment has been damaged in transit, immediately file a claim with the carrier and contact ADTRAN Customer Service (see *Product Warranty*, on page 9).

Contents of ADTRAN Shipments

NetVanta 5305 AC System

Shipments of the NetVanta 5305 include the following items:

*   NetVanta 5305
*   NetVanta 5305 CD
*   Warranty Card
*   IEC 3-prong power cord
*   19" Rack Mount Kit

NetVanta 5305 T3 Wide Module

Shipments of the T3 Wide Module include the following items:

*   T3 Wide Module
*   T3 cable
*   Quick Start Guide

NetVanta HSSI Wide Module

Shipments of the HSSI Wide Module include the following items:

*   HSSI Wide Module
*   Quick Start Guide

NetVanta Octal T1 Wide Module

*   Octal TI Wide Module
*   Quick Start Guide
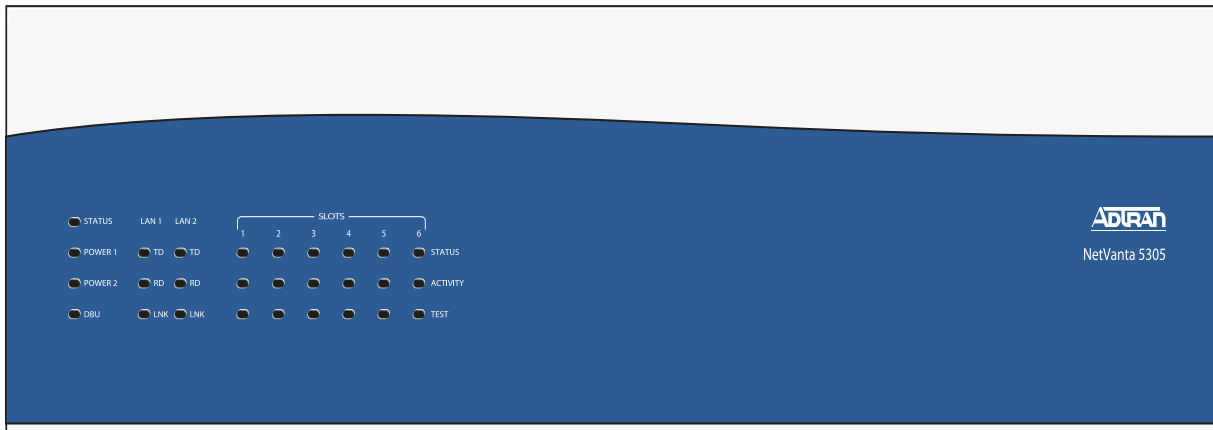
WARNING	*Option modules are intended to be serviced by qualified service personnel only.*

2.   PRODUCT OVERVIEW

Reviewing the Chassis Front Panel Design

Figure 1 shows the NetVanta 5305 front panel.

Figure 1. NetVanta 5305 Front Panel Layout

Front Panel LEDs

Table 1 describes the front panel LEDs in order as located on the chassis from left to right.

Table 1. NetVanta 5305 LEDs

For these LEDs…	This activity…	Indicates that…
STATUS	Green (blinking)	Unit is powering up.
	Green (solid)	Power is on, self-test passed.
	Red (solid)	Self-test failed or boot code could not be loaded.
POWER 1/2	Green	Power supply is operational.
	Red	Power supply failed.
	Off	No power supply is present.
DBU	Off	No dial backup modules are installed.
	Green (solid)	Dial backup module is ready for use.
	Green (blinking)	The unit is in dial backup.
	Red (solid)	Dial backup alarm condition exists.
	Yellow (solid)	Unit is in test.
LAN 1/2 TD/RD	Green (blinking)	There is activity on the Ethernet port.
	Off	There is no activity on the Ethernet port.
LAN 1/2 LNK	Green (solid)	10BaseT link is up.
	Yellow (solid)	100BaseT link is up.
	Red	Link is down.
	Off	Link is administratively down.
STATUS (slots 1-6)	Off	Empty slot, or the interface is administratively down.
	Green (solid)	Link is up.
	Red (solid)	Alarm condition is present on the module.
ACTIVITY (slots 1-6)	Green (blinking)	Data present on the module (i.e., for the T3 module, this indicates TD/RD data).
	Off	No activity on the module.
TEST (slots 1-6)	Off	No test is running.
	Yellow (solid)	Module is in test.

Reviewing the Chassis Rear Panel Design

Figure 2 shows the NetVanta 5305 rear panel. Pinouts for the connectors are given in Appendix A.
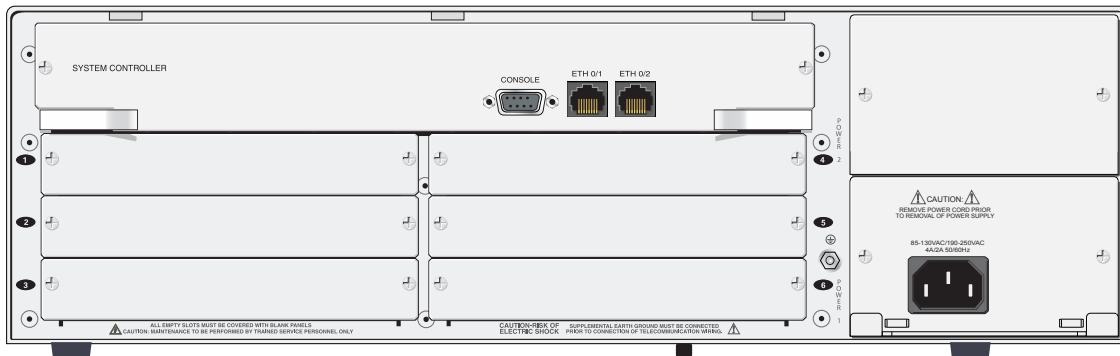
Figure 2. NetVanta 5305 Rear Panel

Rear Panel Interfaces

CONSOLE Port

The **CONSOLE** port, a DB-9 interface located on the rear panel, connects to a computer or modem and provides the following functions:

- Accepts electrical EIA-232 input from a PC or modem for controlling the NetVanta 5305.
- Operates at rates ranging from 9.6 kbps to 115.2 kbps.
- Acts an input for either VT100 or PC control.

LAN Interfaces (ETH 0/1, ETH 0/2)

The NetVanta 5305 provides two RJ-48C connectors on the rear panel Controller module for routing data traffic and for local management access. See Table A on page 27 for the 10/100BaseT Ethernet interface pinout. The 10/100BaseT Ethernet ports provide the following:

- Auto-sensing
- Primary data port service
- Secondary DMZ port service
- Local management access

3.   OPTION MODULES

The NetVanta 5305 family currently offers three option modules to meet networking requirements:

- NetVanta 5305 T3 Wide Module (see page 19)
- NetVanta HSSI Wide Module (see page 20)
- NetVanta T1/E1 Wide Module (see page 21)

The following pages describe each module, providing individual card specifications and features. Refer to Appendix A for pinout information. The *Installing Modules* section on page 24 provides information on module installation.

NetVanta 5305 Controller

The NetVanta 5305 uses a central Controller card to provide configuration for the system using the ADTRAN AOS. The NetVanta 5305 Controller (shown in Figure 3) provides control interfaces for the NetVanta 5305 system including a **CONSOLE** port (DB-9) and two Ethernet interfaces (RJ-48). Refer to Table B on page 27 for the **CONSOLE** connector pinout, and to Table A on page 27 for the Ethernet connector pinout. A Controller module is required for all NetVanta 5305 systems.

Figure 3. NetVanta 5305 Controller Module

Features and Specifications

Interfaces
- **Console**: EIA-232 (DB-9 female) for access to command line interface and monitoring
- **Ethernet:** Two 10/100BaseT interface (RJ-48) for connection to the local area network.

Agency Approvals
- FCC Part 15, Class A
- UL 60950/CSA-C22.2 No. 60950
- EN 60950
- IEC 60950
- AS/NZS 60950
- EN 55022
- EN 55024

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: up to 95% non-condensing

NetVanta 5305 T3 Wide Module (P/N 1200832L1)

The NetVanta 5305 T3 Wide Module (shown in Figure 4) provides a T3 interface with a dual BNC for the NetVanta 5305. The T3 connection provides a full unchannelized T3 interface that provides a connection to the Wide Area Network. Up to two T3 Wide Modules may be used simultaneously in the NetVanta 5305 chassis. The T3 Wide Module may be installed in any slot (1-6). Table D on page 28 gives the pinout for this module.
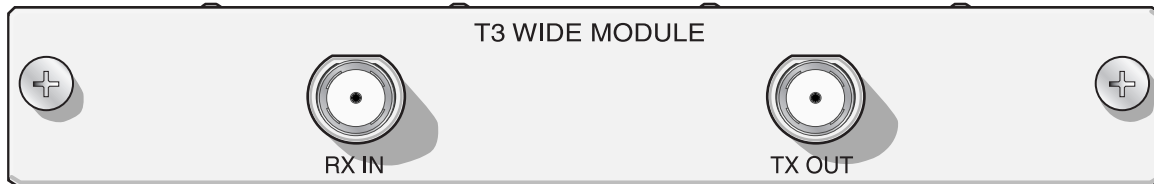

Figure 4. NetVanta 5305 T3 Wide Module

Features and Specifications

Interface
- **DS-3:** electrical (coax) interface

Electrical (coax) interface
- Line Rate: 44.736 Mbps
- Line Code: B3ZS (Bipolar Three Zero Substitution)
- Framing: M13 or C-bit
- Connector: Dual BNC (1 receive, 1 transmit)

Agency Approvals
- FCC Part 15, Class A
- UL 60950/CSA-C22.2 No. 60950
- EN 60950/IEC 60950
- AS/NZS 60950
- EN 55022
- EN 55024

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: up to 95% non-condensing

NetVanta HSSI Wide Module (P/N 1200934L1)

The NetVanta 5305 HSSI Wide Module (shown in Figure 5) provides a HSSI interface for the NetVanta 5305. Up to two HSSI Wide Modules may be used simultaneously in the NetVanta 5305 chassis. The HSSI Wide Module may be installed in any slot (1-6). Table E on page 29 gives the pinout for this module.
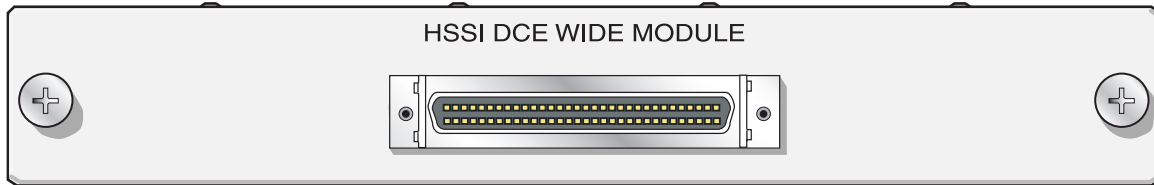
Figure 5. NetVanta HSSI Wide Module

Features and Specifications

Interface
- 50 pin SCSI-II female connector
- Line Rate: 0-52 Mbps
- Signal Type: Electrically balanced with Non Return to Zero encoding
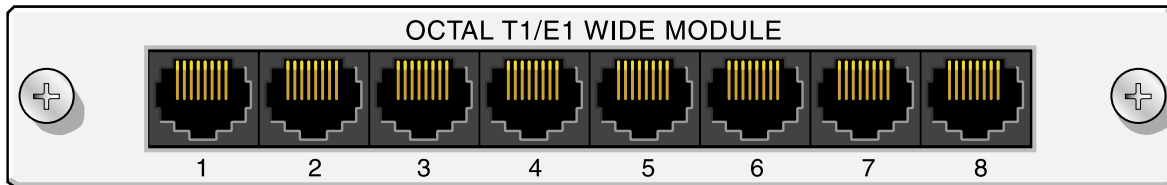
Agency Approvals
- FCC Part 15, Class A
- UL 60950/CSA-C22.2 No. 60950
- EN 60950
- IEC 60950
- AS/NZS 60950
- EN 55022
- EN 54024

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: up to 95% Noncondensing

NetVanta Octal T1/E1 Wide Module (P/N 1200843L1)

The NetVanta Octal T1/E1 Wide Module (shown in Figure 6) provides eight T1 interfaces with RJ-48C wire connections. These interfaces can be used independently or as aggregate bandwidth using Multi-Link PPP protocol. Up to six T1/E1 Wide Modules may be used simultaneously in the NetVanta 5305 chassis. The T1/E1 Wide Module may be installed in any slot (1-6). Table C on page 28 gives the pinout for this module.

Figure 6. NetVanta Octal T1/E1 Wide Module

Features and Specifications

Interface
- RJ-48C
- Line Rate: 1.544 Mbps +/- 75 bps
- Capacity: Eight T1 circuits
- Line Codes: AMI or B8ZS
- Framing: D4 (SF) or ESF
- Line Build-Out: 0,- 7.5, -15, -22.5 dB
- Input Signal: 0 to -36 dB (DS-1)

    Support for Nx64 on all T1 interfaces (1-8)

    Support for Nx56 on T1 interfaces (1-7)

Agency Approvals
- FCC Part 15/Class A
- UL 60950/CSA C22.2 No. 60950
- FCC Part 68/ACTA
- Industry Canada

Environmental
- Operating Temperature: 0°C to 50°C
- Storage Temperature: -20°C to 70°C
- Relative Humidity: up to 95% Noncondensing

4.   UNIT INSTALLATION

The instructions and guidelines provided in this section cover hardware installation topics such as rack mounting the unit and installing option cards. These instructions are presented as follows:

- *Rack Mounting NetVanta 5305* section on page 23
- *Installing Modules* section on page 24
- *Supplying Power to the Unit* section on page 25
- *Installing the NetVanta VPN Accelerator Card (4200368L3)* section on page 25

For information on configuring a specific application, refer to the quick configuration documents provided on your *ADTRAN OS Documentation* CD. For details on the command line interface, refer to the *AOS Command Reference Guide* (also included on the CD).

WARNING	*To prevent electrical shock, do not install equipment in a wet location or during a lightning storm.*

WARNING	*The NetVanta 5305 system is intended to be installed, maintained, and serviced by qualified personnel only.*

Tools Required

The customer-provided tools required for the hardware installation of the NetVanta 5305 are:

- Ethernet cable
- Phillips-head screwdriver

NOTE	*To access the command line interface (CLI) of the NetVanta 5305, you will also need a VT100 terminal or PC with terminal emulation software and a **CONSOLE** port cable. Instructions on how to access the CLI are given in the Command Reference Guide (provided on the ADTRAN OS Documentation CD).*

Mounting Options

The NetVanta 5305 may be installed in a 19" or 23" rack mount configuration. The following sections provide step-by-step instructions for rack mounting.
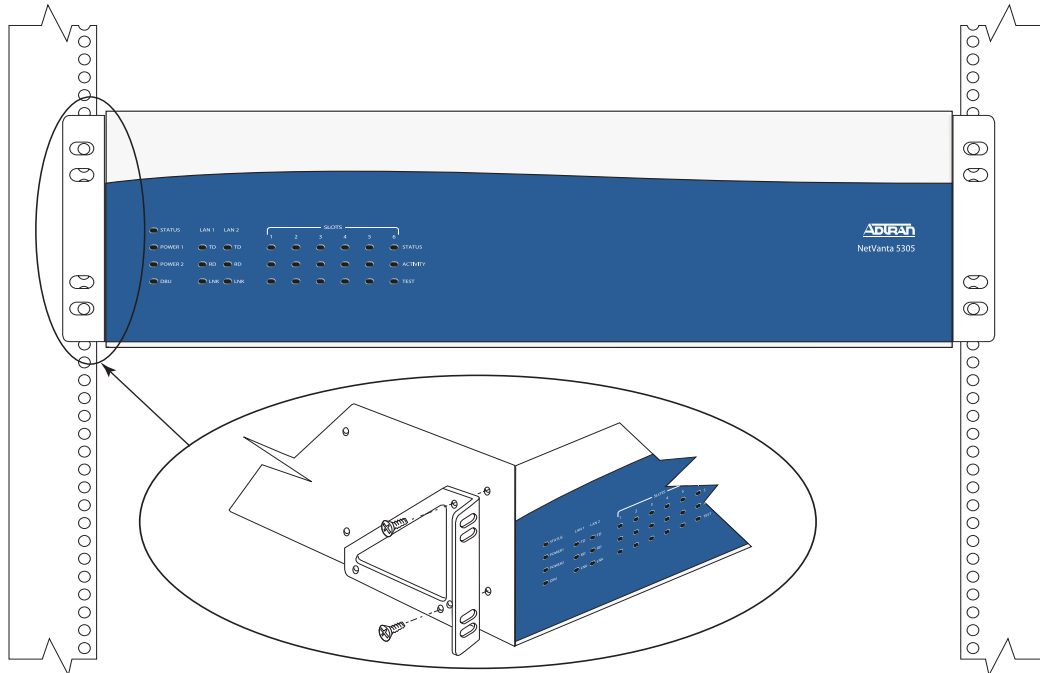
Figure 7. Rack Mounting the NetVanta 5305

Rack Mounting NetVanta 5305

The NetVanta 5305 can be rack mounted in a 19" equipment rack using the mounting kit included with the shipment. Rack mount adapter kits (P/N 12007271L1) can be purchased separately for installation in a standard 23" rack . Follow these steps to mount the NetVanta 5305 into the equipment rack:

Instructions for Rack Mounting NetVanta	
Step	**Action**
1.	Attach the rack mount ears to the NetVanta 5305 chassis.
2.	Position the NetVanta 5305 in a stationary equipment rack. To allow proper grounding, scrape the paint from the rack around the mounting holes where the NetVanta 5305 will be positioned.
3.	Have someone else hold the unit in position as you install two mounting bolts through the unit's brackets and into the equipment rack.
4.	Proceed to the steps given in the *Installing Modules* section on page 24.

> **CAUTION**   *Be careful not to upset the stability of the equipment mounting rack when installing this product.*

Installing Modules

The following table lists the installation steps for inserting modules into the NetVanta 5305 chassis.

> **CAUTION**   *Improper installation may result in damage to the modules.*

Instructions for Installing Modules	
Step	**Action**
1.	Remove the cover plate from the appropriate option slot of the NetVanta 5305 rear panel using a Phillips screwdriver.
2.	Slide the option module into the slot until the module is firmly seated against the front of the chassis.
3.	Secure the thumbscrews at both edges of the module. Tighten with a screwdriver.
4.	Connect the cables to the associated device(s).
5.	Complete the installation of remaining modules and unit as specified in the appropriate sections of this Hardware Installation Guide.

Grounding Instructions

The following paragraphs provide grounding instructions for the Underwriters' Laboratory
UL 60950 Standard for Safety of Information Technology Equipment Including Electrical Business
Equipment, with revisions dated March 15, 2002.

AC Power

The attachment-plug receptacles in the vicinity of the product or system are all to be of a grounding type, and the equipment grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.

A supplementary equipment grounding conductor shall be installed between the product or system and ground that is in addition to the equipment grounding conductor in the power supply cord. The supplementary equipment grounding conductor shall not be smaller in size than the ungrounded branch-circuit supply conductors. The supplementary equipment grounding conductor shall be connected to the product at the terminal provided, and shall be connected to ground in a manner that will retain the ground connection when the product is unplugged from the receptacle. The connection to ground of the supplementary equipment

grounding conductor shall be in compliance with the rules for terminating bonding jumpers at Part K or Article 250 of the National Electrical Code, ANSI/NFPA 70. Termination of the supplementary equipment grounding conductor is permitted to be made to building steel, to a metal electrical raceway system, or to any grounded item that is permanently and reliably connected to the electrical service equipment ground.

The supplemental grounding conductor shall be connected to the equipment using a number 8 ring terminal and should be fastened to the grounding lug provided on the back panel of the equipment. The ring terminal should be installed using the appropriate crimping tool (AMP P/N 59250 T-EAD Crimping Tool or equivalent).

Supplying Power to the Unit

As shipped, NetVanta 5305 is set to factory default conditions. After installing the chassis and any option modules, the system is ready for power-up. To power-up the system, ensure that the unit is properly connected to an appropriate power source (as outlined in the sections which follow).

AC-Powered Systems

The AC-powered NetVanta 5305 comes equipped with a detachable 6-foot power cord with a 3-prong plug for connecting to a grounded power receptacle. To power-up the unit, ensure that the power cord is securely attached to the unit (located on the rear panel) and connect the cord to the appropriate power supply.

CAUTION

- *Power to the NetVanta 5305 AC system must be from a grounded 85-250 VAC, 4A/2A, 50/60 Hz source.*
- *Maximum recommended ambient operating temperature is 50°C.*

Redundant Power Supply (Optional)

A redundant AC power supply may be installed as a backup power supply for the system. The redundant AC power supply can be purchased separately using P/N 1200840L1.

Installing the NetVanta VPN Accelerator Card (4200368L3)

The optional VPN Accelerator Card plugs into a 32-bit PCI slot and is designed to be used in the NetVanta 5305 to provide encryption/decryption and security acceleration services for the host processor. The card is a 1-U high PC card with gold fingers to interface to a 3.3V keyed PCI connector. It provides the following security services to the host processor: DES, Triple-DES, AES, SHA-1, MD5, and Random Number Generation. The card is powered from the +3.3V rail of the PCI Bus, and the power consumption of the card will not exceed 2 Watts.

Instructions for Installing the VPN Accelerator Card	
Step	**Action**
1.	Remove power from the unit.
2.	Use a screwdriver to take the screws out the system Controller module. Remove the module.
3.	Gently slide the accelerator card into the PC card slot as shown. The card is keyed to fit into the slot only one way. To avoid damaging the card pins, do not use excessive force.
4.	Slide the system Controller module into the Controller slot until the module is firmly positioned against the chassis.
5.	Secure the screws at both edges of the module. Tighten with a screwdriver.
6.	Restore power to the unit.
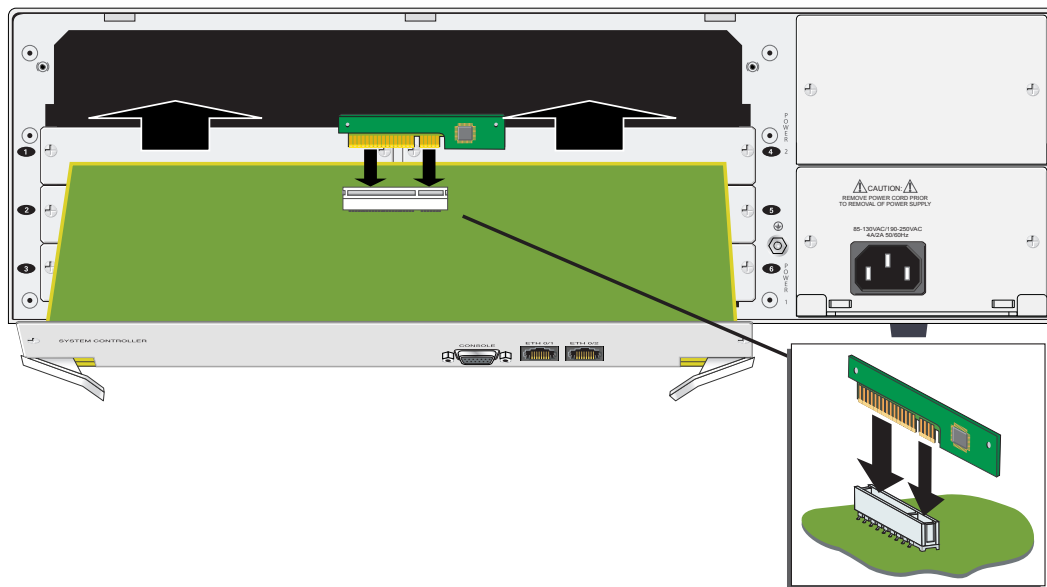
Figure 8. VPN Card Installation

APPENDIX A. PIN ASSIGNMENTS

Controller Pinouts

Table A. 10/100BaseT Ethernet Port Pinout

Pin	Name	Description
1	TX1	Transmit Positive
2	TX2	Transmit Negative
3	RX1	Receive Positive
4,5	—	UNUSED
6	RX2	Receive Negative
7,8	—	UNUSED

Table B. CONSOLE Port (DCE) Pinout

Pin	Name	Description
1	DCD	Data Carrier Detect (output)
2	RD	Receive Data (output)
3	TD	Transmit Data (input)
4	DTR	Data Terminal Ready (input)
5	SG	Signal Ground
6	DSR	Data Set Ready (output)
7	RTS	Request to Send (input)
8	CTS	Clear to Send (output)
9	RI	Ring Indicate (output)

NOTE   *Connection directly to an external modem requires a cross-over cable.*

Connector Pinouts

Table C. T1 1/1 Network (RJ-48C) Connection Pinout

Pin	Name	Description
1	R1	Receive data from the network
2	T1	Receive data from the network
3	—	UNUSED
4	R	Transmit data toward the network
5	T	Transmit data toward the network
6-8	—	UNUSED

Option Module Pinouts

Table D. T3 Wide Module/T3 Interface (BNC)

Name	Description
RX IN	Receive data from the network
TX OUT	Transmit data towards the network

Table E. HSSI Wide Module Pinout

PIN # (+ side)	PIN# (- side)	Direction	Description
1	26	—	HSSI SG - Signal Ground
2	27	I	HSSI RT - Receive Timing
3	28	I	HSSI CA - DCE Available
4	29	I	HSSI RD - Receive Data
5	30	I	HSSI LC - Loopback Circuit C
6	31	I	HSSI ST - Send Timing
7	32	—	HSSI SG - Signal Ground
8	33	O	HSSI TA - DTE Available
9	34	O	HSSI TT - Terminal Timing
10	35	O	HSSI LA - Loopback Circuit A
11	36	O	HSSI SD - Send Data
12	37	O	HSSI LB - Loopback Circuit B
13	38	—	HSSI SG - Signal Ground
14	—	—	No Connection
15	40	—	No Connection
16	41	—	No Connection
17	42	—	No Connection
18	43	—	No Connection
19	44	—	HSSI SG - Signal Ground
20	45	—	No Connection
21	46	—	No Connection
22	47	—	No Connection
23	—	—	No Connection
24	49	I	HSSI TM - Test Mode
25	50	—	HSSI SG - Signal Ground

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