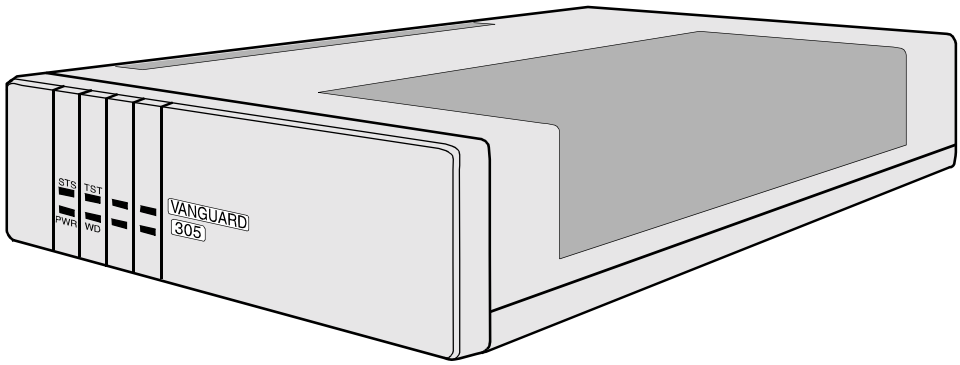
Vanguard Managed Solutions



Vanguard 305 Installation Manual

Notices

575 West Street
Mansfield, Massachusetts 02048
(508) 261-4000

Proprietary Material

Product Declarations and Regulatory Information

For Regulatory Declarations regarding the following:

- CE Marking
- BZT Marking
- DRG Marking
- FCC, CISPR, and EN Classifications
- Industry Canada and CDC Notifications,

See Appendix C, Software License and Regulatory Information.

Part No.: T0047, Revision G
Publication Code: CC
First Printing: August 1997

To comment, use the Customer Response Card located in this manual.

Contents

Contents (continued)

Appendix B. Vanguard 305 Cabling

Appendix C. Software License and Regulatory Information

Limited Warranty

Return Procedures

Index

Overview

Introduction

This manual covers features, hardware, installation, applications, and specifications for the Vanguard 305.

Audience

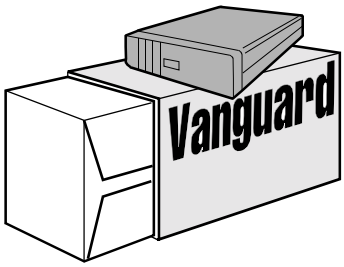
This manual is intended for users of the Vanguard 305.

How to Use This Manual

Chapter Descriptions

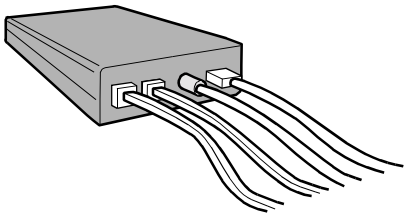
Follow these steps to use this manual to install your Vanguard 305 product.

1 Familiarize Yourself with the Vanguard 305



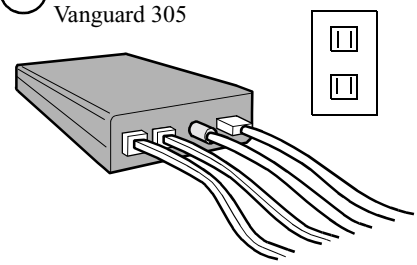
See Chapter 1, About the Vanguard 305

2 Install the Vanguard 305 Hardware



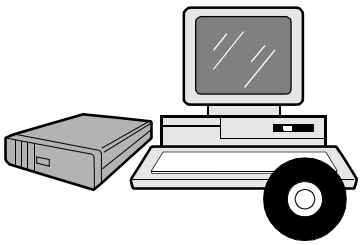
See Chapter 2, Installing Vanguard 305 Hardware

3 Powering on the Vanguard 305



See Chapter 3, Powering on the Vanguard 305

4 Familiarize Yourself with Software



See Chapter 4, Vanguard 305 Software

Chapter Descriptions

The following table describes the contents of this guide.

This section	*Describes*
Chapter 1, About the Vanguard 305	Vanguard 305 hardware and software features.
Chapter 2, Installing Vanguard 305 Hardware	Setting up a Vanguard 305, including site preparation, how to unpack the unit, installation procedures, powerup and diagnostic procedures.
Chapter 3, Powering on the Vanguard 305	Powering on the Vanguard 305
Chapter 4, Vanguard 305 Software	Vanguard 305 operating software and where to obtain it.
Appendix A, Specifications	Specifications, including power and environmental requirements.
Appendix B, Vanguard 305 Cabling	Cables and pinout information.
Appendix C, Software License and Regulatory Information	Software license and regulatory information.

Related Documentation

Introduction

This section describes related documentation and where to obtain documentation.

Other Documentation

All documentation is provided on the Vanguide CD-ROM and the Vanguard Managed Solutions World Wide Web site. For a list of related documentation, refer to the *Documentation Roadmap* provided at the front of this manual.

Software feature documentation may be ordered using the following product codes:

Product Code	***Documentation Kit***	***Includes:***
50922	Vanguard Applications Ware Documentation Set	• Vanguard Applications Ware Basic Protocols (Part Number T0106) • *IP and LAN Feature Protocols* (Part Number T0100) • *SNA Feature Protocols* (Part Number T0101) • *Serial Feature Protocols* (Part Number T0102) • *Multi-Service Feature Protocols* (Part Number T0103) • *Multimedia Feature Protocols* (Part Number T0104) • *Alarms and Reports Manual* (Part Number T0005) • *Software Installation and Coldloading Manual* (Part Number T0028)
50915	IP and LAN Feature Documentation Set	• *IP and LAN Feature Protocols* (Part Number T0100)
50916	SNA Feature Documentation Set	• *SNA Feature Protocols* (Part Number T0101)
50917	Serial Feature Documentation Set	• *Serial Feature Protocols* (Part Number T0102)
50918	Multi-Service Feature Documentation Set	• *Multi-Service Feature Protocols* (Part Number T0103)
50919	Multimedia Feature Documentation Set	• *Multimedia Feature Protocols* (Part Number T0104)
50921	Vanguard Applications Ware Basic Protocols Documentation Set	• *Vanguard Applications Ware Basic Protocols* (Part Number T0106)

Vanguide CD-ROM

The Vanguide CD-ROM contains all Vanguard documentation available at the time of release. The Vanguide CD-ROM is shipped with each Vanguard product. To order an additional copy of the Vanguide CD-ROM, please contact a Vanguard Managed Solutions representative.

Worldwide Web

Check the Vanguard Managed Solutions WWW site for the latest documentation:

http://www.vanguardms.com/documentation

Special Notices

The following notices emphasize certain information in the guide. Each serves a special purpose and is displayed in the format shown:

■Note

Note is used to emphasize any significant information.

Caution

Caution provides you with information that, if not followed, can result in damage to software, hardware, or data.

Warning

Warning is the most serious notice, indicating that you can be physically hurt.

Simplified Chinese

特别通告

以下通告强调指南中的某些信息。
每条信息均有一个特殊的目的并以如下格式显示:

■注解

注解用于强调任何重要的信息。

切记

切记提供您这类信息，如果不遵照信息的要求，可能导致软件、硬件或数据的损坏。

警告

警告是最严重的通告，表明您的身体可能被伤害。

Danish

S¾rlige overskrifter

F¿lgende overskrifter fremh¾ver nogle af oplysningerne i vejledningen. De tjener hvert et specifikt formŒl og vises i f¿lgende format:

■Bem¾rk

Bem¾rk anvendes til at fremh¾ve vigtig information.

Forsigtig

Forsigtig understreger oplysninger, som, hvis de ikke bliver fulgt, kan f¿re til beskadigelse af software, hardware eller data.

Advarsel

Advarsel er den mest alvorlige overskrift, og tilkendegiver mulig personskade.

Dutch

Bijzondere vermeldingen

De volgende vermeldingen besteden extra aandacht aan bepaalde informatie in de handleiding. Elke vermelding heeft een eigen nut en wordt in de volgende opmaak weergegeven:

Opmerking
Een opmerking wordt gebruikt om belangrijke informatie te benadrukken.

Let op

Dit kopje geeft aan dat u de beschreven instructies moet volgen om schade aan de software, hardware of gegevens te vermijden.

Waarschuwing

Een waarschuwing is de belangrijkste vermelding. Indien u deze niet volgt, kan dit tot lichamelijke verwondingen leiden.

Finnish

Erityisilmoitukset

Seuraavat ilmoitukset korostavat tiettyjŠ oppaan tietoja. Kullakin on oma erikoistarkoituksensa ja ne esitetŠŠn seuraavassa muodossa:

Huomaa
Huomautusta kŠytetŠŠn korostamaan tŠrkeŠtŠ tietoa.

Vaara

Vaarailmoitus antaa tietoa, jonka huomiotta jŠttŠminen voi johtaa ohjelmiston, laitteiston tai tietojen vahingoittumiseen.

Varoitus

Varoitus on kaikkein vakavin ilmoitus ja se kertoo mahdollisesta loukkaantumisriskistŠ.

French

Messages spŽciaux

Les messages suivants mettent en valeur certaines informations dans le guide. Chacun dÕeux remplit une fonction spŽciale et est affichŽ dans le format indiquŽ :

Important
Important est utilisŽ pour souligner des informations critiques au sujet dÕune procŽdure.

Mise en Garde

Une mise en garde vous fournit des informations qui, si elles ne sont pas observŽes, peuvent se traduire par des dommages pour le logiciel, le matŽriel ou les donnŽes.

Avertissement

Un avertissement constitue le message le plus sŽrieux, indiquant que vous pouvez subir des blessures corporelles.

German

Besondere Hinweise

Durch die folgenden Hinweise werden bestimmte Informationen in diesem Handbuch hervorgehoben. Jeder Hinweis dient einem bestimmten Zweck und wird im dargestellten Format angezeigt:

Wichtig

WICHTIG wird zur Betonung signifikanter Angaben zu Vorgehensweisen verwendet.

Vorsicht

Ein Vorsichtshinweis macht Sie darauf aufmerksam, da§ Nichtbefolgung zu Software-, Hardware- oder DatenschŠden fŸhren kann.

Warnung

Eine Warnung weist Sie darauf hin, da§ ernsthafte Kšrperverletzungsgefahr besteht.

Italian

Simboli speciali

I seguenti simboli, ciascuno con una speciale funzione, evidenziano determinate informazioni allÕinterno del manuale. Il formato quello riportato qui di seguito.

Nota

Questo tipo di avvertimento viene utilizzato per evidenziare tutte le informazioni significative relative ad una procedura.

Attenzione

Questo tipo di avvertimento fornisce informazioni che, se non vengono seguite, possono provocare danni al software, allÕhardware o ai dati.

Avvertenza

Questo tipo di avvertimento indica la presenza di condizioni di rischio che possono causare lesioni fisiche. Si tratta del simbolo pi importante al quale prestare attenzione.

Japanese

特別表記

ガイド内では、以下の表記を使って特に注意する必要のある情報が提供されます。各表記にはそれぞれ目的があり、次の形式で表示されます。

■ 重要
　重要な情報が記述されています。

注意

記述されている内容に従わない場合、ソフトウェア、ハードウェア、またはデータが壊れる可能性があります。

警告

最も重要な情報が記述されています。身体的な障害を被る可能性があります。

Korean

일러두기

이 설명서에는 사용자에게 특정한 내용을 강조하기 위해서 다음 내용이 포함되어 있습니다.

■참고
　중요한 정보를 강조하는데 사용합니다.

주의

소프트웨어나 하드웨어, 또는 데이터를 손상시킬 수 있으므로 주의가 필요한 상황을 알립니다.

경고

사용자의 안전에 위험을 알리는 가장 심각한 수준의 경고입니다.

Norwegian

Spesielle merknader

Merknadstypene nedenfor representerer en bestemt type informasjon i hŒndboken. Hver merknadstype har en spesiell hensikt og vises pŒ f¿lgende format:

■**Merk**
　Merk brukes for Œ fremheve viktig informasjon.

Forsiktig

Forsiktig gir deg informasjon om situasjoner som kan f¿re til skade pŒ programvare, datamaskin eller data dersom den blir fulgt.

Advarsel

Advarsel er den mest alvorlige merknaden og indikerer at du kan bli fysisk skadet.

Portuguese/ Portugal

Avisos Especiais

Os avisos que se seguem real am certas informa ›es neste guia. Cada um deles serve um objectivo especial e Ž visualizado no formato apresentado:

Nota

Nota Ž utilizado para real ar qualquer informa ‹o importante.

Aten ‹o

Aten ‹o faculta-lhe informa ›es que, se n‹o forem cumpridas, poder‹o provocar danos no software, hardware ou nos dados.

Cuidado

Cuidado constitui o aviso mais grave, o qual indica que poder‡ ficar fisicamente ferido.

Spanish/Spain

Las siguientes notificaciones ponen Žnfasis sobre determinada informaci—n de la gu'a. Todas tienen un prop—sito especial y se muestran con el formato siguiente:

Nota

Las notas se utilizan para destacar determinada informaci—n de importancia.

Advertencia

Las advertencias le proporcionan informaci—n que debe seguirse, si no desea que el software, el hardware o los datos puedan verse da–ados.

Aviso

Los avisos son las notificaciones de car‡cter m‡s importante e indican la posibilidad de da–os f'sicos para el usuario.

Swedish

Speciella beteckningar

Fšljande beteckningar betonar viss information i handboken. Var och en har ett speciellt syfte och visas i formatet nedan:

OBS!

OBS! anvŠnds fšr att betona viktig information.

Viktigt

Viktigt ger dig information som, om den inte fšljs, kan resultera i skada i programvara, maskinvara eller data.

Varning

Varning Šr den mest allvarliga beteckningen och den indikerar att du kan skadas fysiskt.

Customer Information

Customer Questions

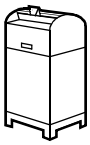
Customers who have questions about Vanguard Managed Solutions products or services should contact your Vanguard Managed Solutions representative or visit this website for product, sales, support, documentation, or training information:

http://www.vanguardms.com

Comments About This Manual

To help us improve our product documentation, please complete the prepaid comment card included with this manual and return it by fax to (508) 339-9592. If you prefer, provide your name, company, and telephone number, and someone in the documentation group will contact you to discuss your comments.

Customer Response Card



Vanguard Managed Solutions would like your help in improving its product documentation. Please complete and return this card by fax to (508) 339-9592; Attention: Product Documentation, to provide your feedback.

To discuss comments with a member of our documentation group, provide telephone information at the bottom of this page. **Thank you** for your help.

Name _____

Company Name _____

Address _____

_____

_____

Document Title: Vanguard 305 Installation Manual

Part Number: **T0047 Rev G**

Please rate this document for usability:

☐ Excellent ☐ Good ☐ Average ☐ Below Average ☐ Poor

What did you like about the document? _____

_____

_____

_____

_____

What information, if any, is missing from the document? _____

_____

_____

_____

_____

Please identify any sections/concepts that are unclear or explained inadequately.

_____

_____

_____

_____

Additional comments/suggestions. _____

_____

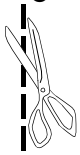
_____

_____

_____

Telephone _____ Ext. _____ Best time to call_____

Cut Here



Chapter 1
About the Vanguard 305

Overview

Introduction

The Vanguard 305 provides serial devices with Token Ring access into X.25, public or private Frame Relay, leased line, and ISDN networks.

The Vanguard 305 is available as a desktop-size standalone enclosure, as shown in Figure 1-1.

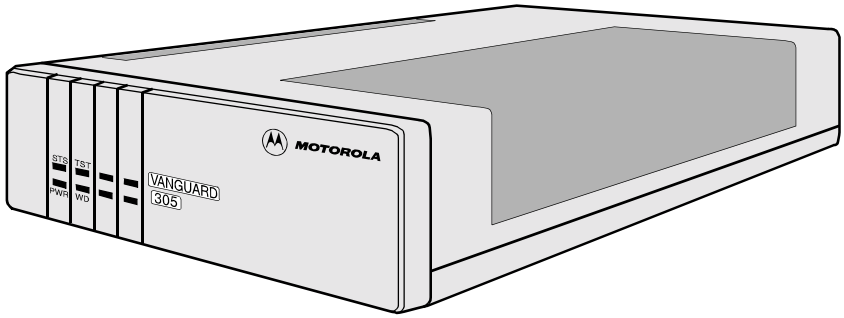


Figure 1-1. Vanguard 305

Features

Standard Features

All Vanguard 305 base units provide the following:

- Control Terminal Port (CTP) for local and remote configuration and management
- UTP and STP Token Ring Interfaces
- V.24 Port
- DIM Port
- 2 Megabyte (MB) FLASH
- 12 MB DRAM

CTP Port

The Control Terminal Port (CTP) is used for configuration, reporting, and troubleshooting. Port 4 is factory-configured as the CTP port. Under normal conditions this may prove sufficient; however, you can default Port 3 for CTP access using the front panel dip switch. Refer to the "Connecting to the Control Terminal Port" section in Chapter 2 for more information on the CTP.

Token Ring LAN Support

The Vanguard 305 features a Token Ring interface. Support includes:

- 4 and 16 Mbps support
- Type 1 STP (DB-9)
- Type 3 UTP (RJ-45)
- Automatically configures for STP or UTP

Operating Software

Operating software is compressed in FLASH memory and loaded into DRAM for operation. The Vanguard 305 supports these software licenses:

- IP Applications Ware Package
- IP & IPX Applications Ware Package
- SNA Applications Ware Package
- Serial Protocol Applications Ware Package
- Multiservice Applications Ware Package
- Multimedia Applications Ware Package

See the *Software Release Notice* accompanying your Vanguard unit for more information on the software available for the Vanguard 305.

Daughtercard Functionality

Introduction

The Vanguard 305 is available with the optional components listed below as factory-installed or as separate add-in daughtercards.

- DSU Daughtercard
- FXS/FXO Daughtercard
- Dual FXS Daughtercard
- Dual E&M Daughtercard
- RemoteVU Daughtercard
- DIM Site Daughtercard
- DIM on the motherboard
- ISDN U or S/T Daughtercard
- V.34 Daughtercard
- Data Compression or Data Encryption SIMM

Refer to the *Vanguard Daughtercard Installation Guide* (Part Number T0020) for information on the installation of optional daughtercards.

FXS/FXO Daughtercard

The Vanguard 305 supports the FXS/FXO Daughtercard. This daughtercard supports one voice channel, using either an analog FXS or FXO interface. Both interfaces use RJ11 connectors.

Dual FXS Daughtercard

The Dual FXS Daughtercard provides two FXS interface ports and support one voice channel each. The FXS port uses RJ11 connectors.

Dual E&M Daughtercard

The Dual E&M Daughtercard provides two E&M interface ports. The E&M ports use RJ45 connectors.

RemoteVU Daughtercard

The Vanguard 305 supports video over Frame Relay using the RemoteVU daughtercard. The RemoteVU Daughtercard provides two BNC connector, video ports accepting NTSC, PAL, or SECAM video signal standards and an RJ-45, EIA-232/485 camera control port used for Pan/Tilt/Zoom (PTZ) camera control.

ISDN Daughtercard

The Vanguard 305 with the ISDN daughtercard, provides serial and LAN devices with access to public Integrated Service Digital Networks (ISDN).The ISDN daughtercard provides a BRI U or S/T interface with RJ45 connectors on Port 1. The ISDN S/T daughtercard provides a BRI S interface configured in a passive bus arrangement.

DSU Daughtercard

The DSU daughtercard functionality suits an extended range of 56 kbps point-to-point DDS1 interfaces that conforms to AT&T 62310 or ANSI T1E1.4/91-006. The DSU is FCC Part 68 registered.

Diagnostic loopbacks from the telephone company are supported. Local diagnostics are activated from the CTP.

DIM Site Daughtercard	The DIM Site daughtercard provides optional V.24, V.35, V.36, or V.11 electrical interfaces through a DB25 physical connector.
DSU DIM	The Vanguard 305 supports DSU DIMs.
V.34 Daughtercard	The Vanguard 305 supports the Vanguard V.34 Daughtercard. The Vanguard V.34 Daughtercard acts as a synchronous V.34 modem to communicate with other V.34 modems using bit-oriented or character oriented protocols over the analog PSTN. The V.34 Daughtercard provides two RJ11 interface ports. For information on configuring this daughtercard refer to the *3460 Fast'R User Guide* (Part Number T0022-01).
Data Compression or Data Encryption SIMM	The Vanguard 305 supports Data Compression or Data Encryption SIMMs.

Software Functionality

Introduction

Depending on the Applications Ware package and optional daughtercard installed the Vanguard 305 can support the following functionality and services.

Frame Relay & X.25 Service

The Vanguard 305 provides serial devices with economical Token Ring LAN access into public or private Frame Relay WAN. Where frame relay services are not yet available, the Vanguard 305 can provide network access over X.25 services. When frame relay services become available, the Vanguard 305 can be easily configured and integrated to support frame relay. This fast migration reduces network downtime and protects hardware investments.

Voice Support

Equipped with the optional Dual FXS or FXS/FXO daughtercard and the Multimedia Applications Ware package, the Vanguard 305 supports voice applications over IP or over frame relay. With the Voice over IP software installed, the Vanguard supports Voice over IP network. Combining voice and data traffic eliminates expensive long distance toll charges and the need for dedicated voice circuits.

RFC 877 and 1356

The Vanguard 305 supports encapsulation of IP datagrams and other network layer protocols over X.25 as specified in RFC 877 and RFC 1356. This allows for interoperability with Front End Processors (FEPs) that support X.25 and IP traffic as well as router vendors supporting RFC 877/1356.

RFC 1490

The Vanguard 305 supports encapsulation of multiple protocols over frame relay as specified by RFC 1490.

Multiprotocol Support

Support includes SDLC, Bisync, X.25, Async, IP/IPX, PPP, MLPPP, and Routing and Bridging, as well as many other serial protocols. Refer to the Software Release Notice which accompanied your unit for a complete listing of protocols supported by the Vanguard 305.

Target Application Environments

Introduction

Figure 1-2 shows some sample applications for the Vanguard 305.

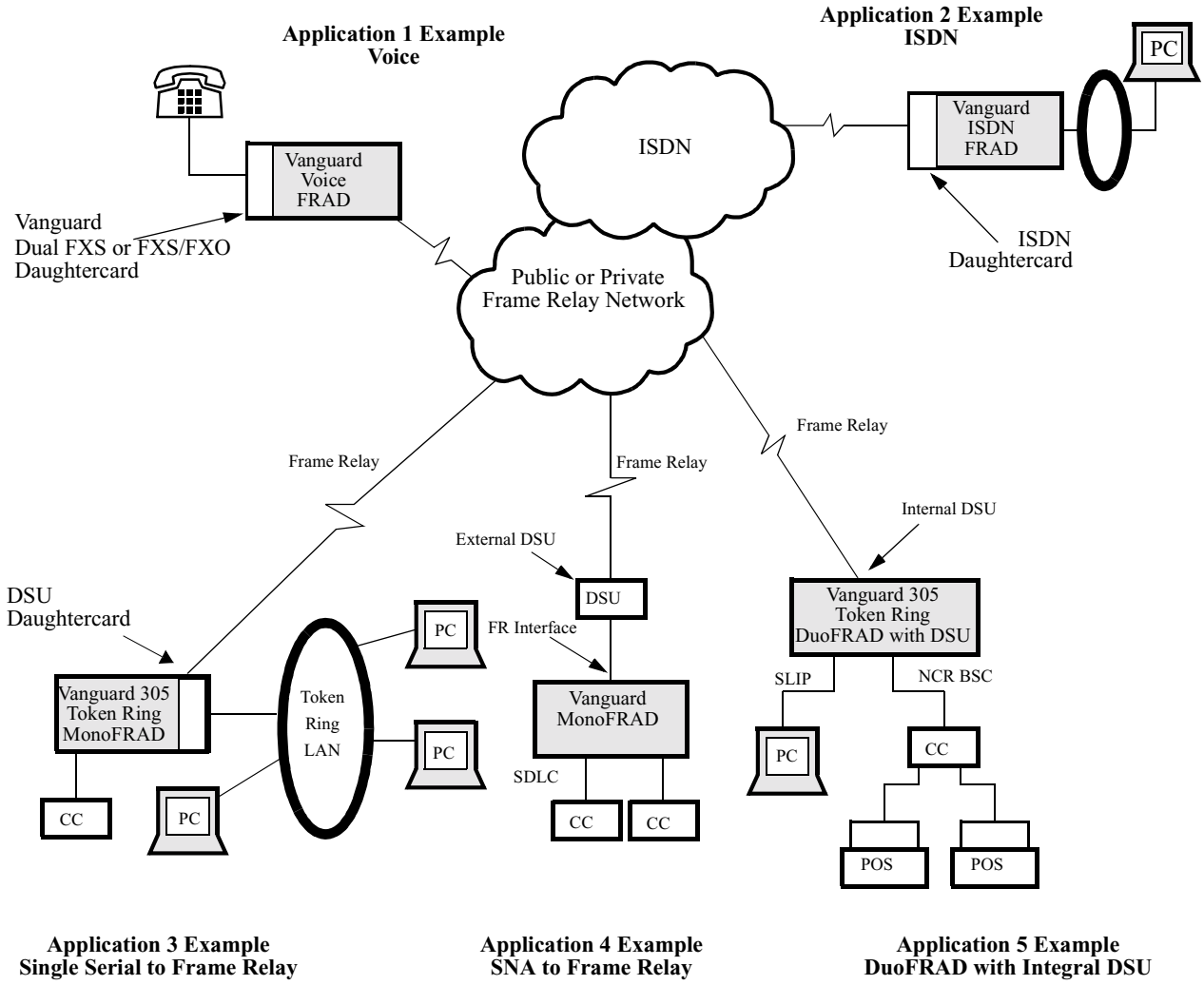


Figure 1-2. Vanguard 305 Sample Applications

Voice

Equipped with an optional Dual FXS or FXS/FXO daughtercard, the Vanguard 305 supports voice application over public or dedicated line frame relay, as shown in application 1. Combining voice and data traffic eliminates expensive long distance toll charges and the need for dedicated voice circuits.

ISDN

In application 2, the Vanguard 305 provides ISDN network connection for devices on a Token Ring LAN. The Vanguard 305 equipped with the ISDN daughtercard provides an ideal solutions for small branch offices accessing file servers or host devices on another LAN in the main office.

Multiprotocol Support over Frame Relay

In application 3, 4, and 5, the Vanguard 305 acts as a bridge or router to transport encapsulated serial or IP data from LAN across the WAN to a central router. The hardware configuration in each application is slightly different but provides the same functionality. An external DSU, DIM site DSU, or DSU daughtercard can be used.

SNA Traffic

In application 3, the Vanguard 305 can be used for transporting encapsulated SNA/SDLC data from a LAN over the frame relay network to a central host or front end processor. The Vanguard 305 can be used to support banking applications between terminals in a branch office accessing host servers located at the central bank office.

Chapter 2
Installing Vanguard 305 Hardware

Overview

Introduction

This chapter covers Vanguard 305 hardware installation.

Follow These Steps

This table lists the steps you need to perform and shows you where to look for the information on installing the Vanguard 305:

Step	*To Perform This Action*	*See This Procedure*
1	Check the contents of the shipping package to make sure everything is included.	"Checking Your Shipment Contents" section on page 2-3.
2	Choose a site for the Vanguard 305.	"Choosing a Site" section on page 2-5.
3	Connect cables for the Vanguard 305.	"Cabling the Vanguard 305" section on page 2-7.
4	Setting the front panel dip switches.	"Front Panel Switches" section on page 2-11

Warnings

The following special notices apply to all equipment handling procedures in this manual.

Warning

Only trained, qualified technicians should perform procedures outlined in this manual. Vanguard daughtercards and DIMs are sensitive to static discharge, which can damage components. Trained, qualified technicians will use proper handling and grounding precautions when handling a Vanguard daughtercard or DIM.

Avertissement

Seuls des techniciens qualifiés doivent mettre en pratique les procédures décrites dans ce manuel. Les cartes fille Vanguard et les DIM sont sensibles aux décharges statiques qui peuvent endommager les composants. Les techniciens formés et qualifiés prendront les dispositions et précautions de mise à la terre nécessaires lors de la manipulation de cartes fille Vanguard et de DIM.

Warning

Die in diesem Handbuch aufgeführten Vorgänge sollten ausschließlich von geschulten und qualifizierten Technikern durchgeführt werden. Da Vanguard-Zusatzkarten und DIMs von Vanguard Managed Solutions keinen statischen Entladungen ausgesetzt werden sollten, da Komponenten beschädigt werden können, werden sie von dem qualifizierten technischen Personal mit den entsprechenden Maßnahmen zur Erdung und zum Schutz vor statischen Ladungen gehandhabt.

Warning

Ports capable of connecting to ports on other apparatus are defined as Safety Extra Low Voltage (SELV). To conform with EN60950, ensure that these ports are only connected to ports of the same type on other apparatus.

Avertissement

Les ports qui sont susceptibles d'être connectés à des équipements sont désignés comme TBTS. Pour garantir la conformité à la norme EN 60950, n'interconnecte ces ports qu'avec des ports du même type sur des autres matériels.

Warnung

Anschlusse, die mit anderen Geraten verbindet werden konnen, sind als SELV beschrieben. Um Konformitat mit EN 60950 zu versichern, sichern Sie es, daß diese Anschlusse nur mit den des selben Type auf anderen Geraten verbindet werden.

Checking Your Shipment Contents

Unpacking Vanguard 305

The Vanguard 305 is packaged in shock-absorbent packing material. Figure 2-1 shows how to properly unpack the Vanguard 305 from its shipping carton.

Note

Vanguard 305 components are installed in the base unit before it is shipped from the factory. In addition to the base unit and accompanying components, the shipping carton may include a sleeve containing the power cord if you ordered one.

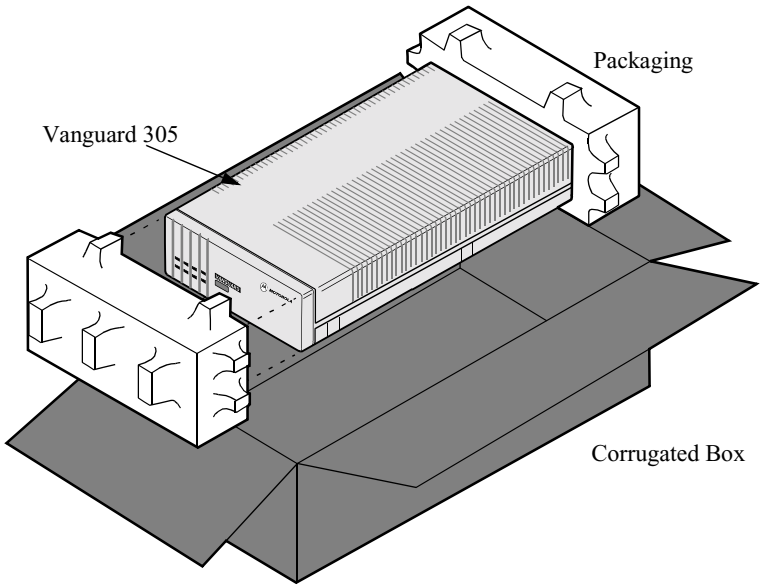
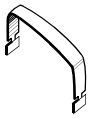


Figure 2-1. Unpacking the Vanguard 305

List of Contents

Before you install the Vanguard 305 hardware, make sure your shipment contents are complete. Inside your shipping carton, you should find the contents shown in Figure 2-2.

Vanguard 305



DIM Extraction Tool

Figure 2-2. Vanguard 305 Shipment Contents

In Case of Damage or Missing Parts

If the equipment is damaged, contact the shipper. If you have additional concerns about damaged or missing parts, contact your nearest Vanguard Managed Solutions representative.

In the United States, contact: Vanguard Managed Solutions, 575 West Street, Mansfield, MA 02048-1193.

Outside the United States, contact the nearest distributor.

Choosing a Site

Introduction

This section describes how to choose a site for the Vanguard 305.

How to Choose a Site

Choose a site within an appropriate distance of a power source. The selected site should be free of accumulated dust and environmental extremes.

Warning

All Vanguard products should be used in environments designed for computers and electronic equipment. In areas susceptible to lightning, take precautions to prevent damage to electronic equipment. Contact your telephone company or an electronic accessories vendor for information on lightning protection equipment. If you experience problems caused by surges from lightning, install appropriately rated surge suppressors on power and data lines connected to your Vanguard.

Avertissement

Tous les produits Vanguard doivent être utilisés dans des environnements conçus pour les ordinateurs et équipements électroniques. Dans les zones sujettes à la foudre, prenez soin de protéger l'équipement électronique contre tout dommage. Contactez votre compagnie de téléphone ou un vendeur d'accessoires électroniques pour de plus amples informations sur les équipements de protection contre la foudre. Si vous avez des problèmes engendrés par des surtensions dues à la foudre, installez des protections contre les surintensités appropriées sur les lignes d'alimentation et de données connectées à votre produit Vanguard.

Warnung

Alle Vanguard-Produkte sollten in für Computer und elektronische Geräte geeigneten Umgebungen verwendet werden. In durch Blitzschlag gefährdeten Gebieten sollten Vorsichtsmaßnahmen zum Schutz von elektronischen Geräten ergriffen werden. Informationen über Schutzeinrichtungen gegen Blitzschlaggefahr erhalten Sie von Ihrer Telefongesellschaft oder vom Einzelhandel für Elektrozubehör. Wenn Sie durch Blitzeinwirkung verursachte Spannungsstörungen feststellen, installieren Sie einen ausreichend abgesicherten Spannungsableiter an den Strom- und Datenleitungen, die mit dem Vanguard-Produkt verbunden sind.

Power Source

Depending on your application and the country in which the Vanguard 305 will operate, a power source must be a grounded 100 to 240 VAC outlet.

Cable Clearance/ Air Circulation

Allow at least 12 inches (30.5 cm) in back of the unit for interfacing cable clearance and air circulation, as shown in Figure 2-3.

Warning

To avoid overheating the unit's circuitry, you should never place anything on top of the unit, within 1 inch (2.5 cm) of the ventilation slots on the front panel, or within 12 inches (30.5 cm) of the back of the unit.

Avertissement

Afin d'éviter toute surchauffe des circuits de l'unité, ne placez aucun objet sur l'unité à moins de 2,5 cm (1 pouce) des conduits de ventilation du panneau avant et à moins de 30,5 cm (12 pouces) de l'arrière de l'unité.

Warnung

Zur Vermeidung einer Überhitzung der Geräteschaltkreise sollten Sie keine Gegenstände auf dem Gerät plazieren. Zu den Entlüftungsöffnungen der Vorderabdeckung sollte ein Abstand von 2,5 cm und zur Rückseite des Gerätes von 30,5 cm eingehalten werden.

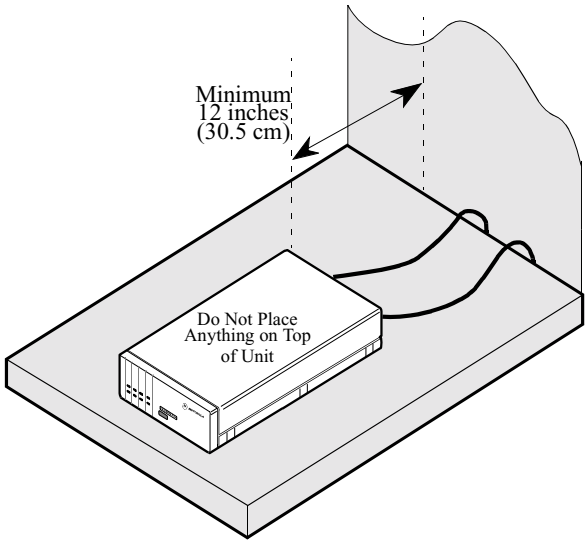


Figure 2-3. Proper Cable and Air Clearance

Cabling the Vanguard 305

Introduction

After you unpack the Vanguard 305, you can connect the cables to complete the installation.

Rear Panel

Figure 2-4 illustrates the rear panel of the Vanguard 305 and shows the connectors for the optional daughtercards.

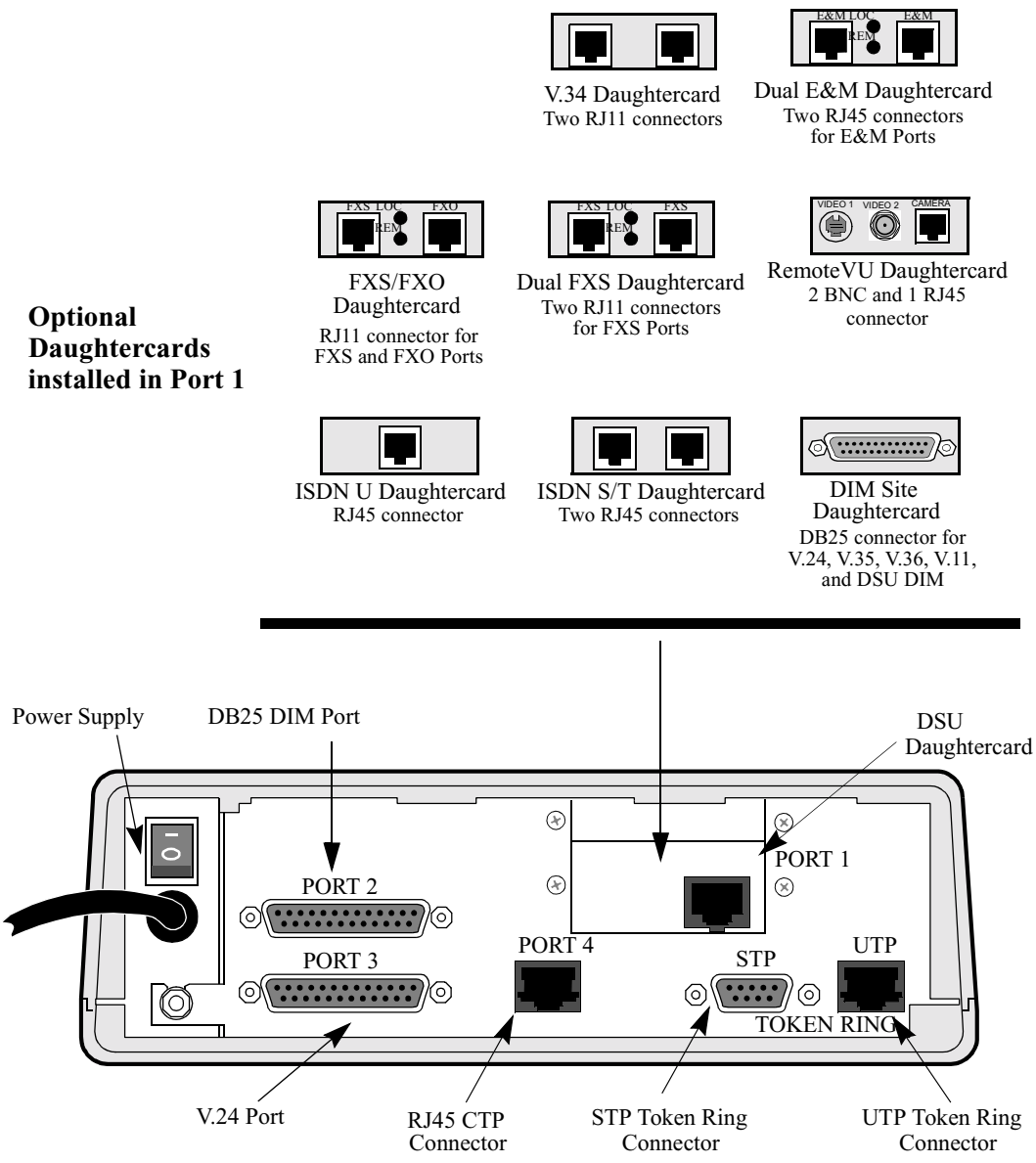


Figure 2-4. Vanguard 305 Rear Panel

Cables

Introduction

This section describes cables required to connect to the Vanguard 305.

Port Characteristics and Cable Requirements

The table below lists the port characteristics, connector, and cable requirements.

Port	Connector	Interface	Cable Required	Speed	DCE/DTE
1	DB25	DIM Site Daughtercard V.11, V.24, V.35, V.36	DB25-to-DB25 Cable	V.11, V.35 and V.36 - Max. sync speed 2 mpbs V.24 - Max. sync speed 80 kpbs, Max async speed 115.2 kbps	Selectable
		DIM Site Daughtercard DSU DIM	DSU/EIM Cable Assembly and Lease Line Telco Cable (Part Number) shipped with Integral DSU only	DSU - 56 kbps	DCE DSU N/A
	RJ48S	DSU Daughtercard	DSU Telco Cable (Part Number) shipped with DSU Daughtercard	DSU -56 kbps	DCE DSU N/A
	RJ11	FXS/FXO Daughtercard	RJ11-to-RJ11 Cable	N/A	N/A
	BNC video connector	RemoteVU Daughtercard	BNC-to-BNC Cable	N/A	N/A
	RJ45 connector	RemoteVU Daughtercard	RJ45-to-RJ45 Cable	N/A	N/A
	RJ11	Dual FXS Daughtercard	RJ11-to-RJ11 Cable	N/A	N/A
	RJ45	ISDN U or S/T Daughtercard	RJ45-to-RJ45 Cable	Either 56 or 64 kbps for each B Channel and 9.6 kbps for the D Channel	N/A
	RJ45	Dual E&M Daughtercard	RJ45-to-RJ45 Cable	N/A	N/A
	RJ11	V.34 Daughtercard	RJ11-to-RJ11	N/A	N/A

Port	Connector	Interface	Cable Required	Speed	DCE/DTE
2	DB25	V.11, V.24, V.35, V.36 DIM	DB25-to-DB25 Cable	V.11, V.35 and V.36 - Max. sync speed 2 mpbs V.24 - Max. sync speed 80 kpbs, Max async speed 115.2 kbps	Selectable
		Integral DSU DIM	DSU/EIM Cable Assembly and Lease Line Telco Cable (Part Number) shipped with Integral DSU only	DSU - 56 kbps	
3	DB25	V.24, CTP Port	DB25-to-DB25 Cable	Max. async speed 115.2 kbps Max. sync speed 80 kbps	Selectable
4	RJ45	CTP Port	RJ45-to-DB25 CTP Cable shipped with Vanguard unit	Max. async speed 115.2 kbps	DCE
STP	9-pin D subminiature	Token Ring	Sheilded cable	4 or 16 Mbps (Default is 4 Mbps)	N/A
UTP	RJ48S	Token Ring	Unsheilded cable	4 or 16 Mbps (Default is 4 Mbps)	N/A

Cable and Connector Pinouts

For more information on cable and connector pinouts, refer to Appendix B, Vanguard 305 Cabling or to the *Daughtercard Installation Guide* for information on the optional daughtercards.

Connecting to the Token Ring Port

The Vanguard 305 provides a UTP (unsheilded) and STP (sheilded) connector for connecting to a Token Ring. No strapping is required during installation to configure the unit as the port will automatically configures for the connected interface.

Note

Only one connector can be used at a time.

Connecting to the Control Terminal Port

Introduction

This section describes how to connect to the Control Terminal Port (CTP) to configure your Vanguard 305.

Connecting a Terminal to Port 4 for CTP Access

Port 4 is dedicated for CTP access. To connect a local terminal, use the RJ45 to DB25 CTP cable shipped with the unit. If you wish to connect an asynchronous device to Port 4 for CTP access, use a straight through 8-conductor RJ45 cable (for example, Inmac P/N Q0462-1 or Black Box P/N RM-EL08MS-07).

Connecting a Terminal to Port 3 for CTP Access

If Port 4 is not available for CTP access, you can use Port 3 for CTP access. You must default Port 3 to CTP following the steps below.

Step	*Action*
1	From the front panel of the unit, set the dip switch CTP Port 3 to the UP position.
2	Reset or power cycle the unit.

Note

You can use any port for CTP access, but only Port 3 can be automatically defaulted for CTP access. Port 3 is a DCE.

Terminal Setting

The Vanguard 305 defaults the CTP to 9.6 kbps, 8 bits, no parity, 1 stop bit, and you must also configure your terminal or terminal emulation software to these settings.

Front Panel Switches

Introduction

This section describes the front panel dip switches on the Vanguard 305.

Front Panel Switches

Figure 1-4 illustrates the switches found behind the front panel of the Vanguard 305.

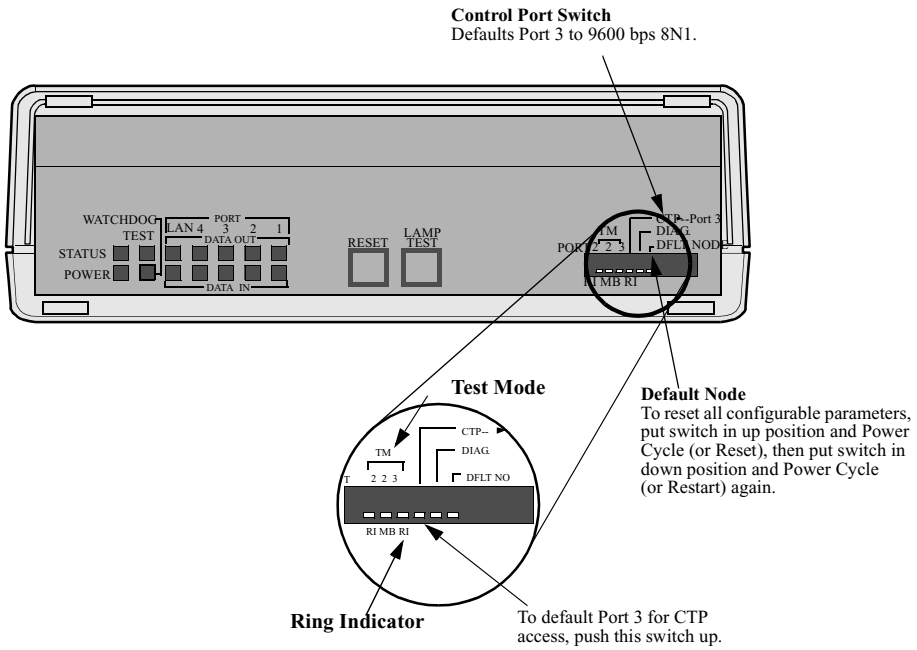


Figure 2-5. Vanguard 305 Front Panel Switches

Front Panel DIP Switch Settings

The six DIP switches on the front panel are defined as follows:

Switch Posn.	*Switch Name*	*Down*	*Up*
1	Port 2 RI/TM	Pin 22 is input on Port 2.	Pin 22 is output on Port 2.
2	Port 2 MB	Pin 25 is input on Port 2.	Pin 25 is output on Port 2.
3	Port 3 RI/TM	Pin 22 is input on Port 3.	Pin 22 is output on Port 3.
4	Port 3 CTP	Normal operation.	Configure Port 3 as CTP port.
5	DIAGNOS-TICS	Normal operation.	Reserved.
6	DEFAULT NODE	Normal operation.	Resets all configurable parameters to default values.

Installing Optional Daughtercards

Optional Daughtercards

The Vanguard 305 supports the following optional daughtercards:

- ISDN Daughtercard
- FXS/FXO Daughtercard
- Dual FXS Daughtercard
- Dual E&M Daughtercard
- RemoteVU Daughtercard
- DSU Daughtercard
- DIM Site Daughtercard
- V.34 Daughtercard

These daughtercards can be installed either in the factory or on-site. Refer to the *Vanguard Daughtercard Installation Guide* (Part Number T0020) for complete daughtercard installation instructions.

Caution

On-site installation of these optional daughtercards should be undertaken by trained service technicians.

Mise en Garde

LÕinstallation de ces cartes fille optionnelles doit tre effectuŽe par des techniciens expŽrimentŽs.

Vorsicht

Die Installation vor Ort dieser optionalen Zusatzkarten sollte von geschulten Kundendiensttechnikern durchgefŸhrt werden.

ISDN Termination Resistance

Introduction

This section contains basic information on setting ISDN Termination Resistances. If you require any additional information on ISDN, refer to the *Multi-Service Feature Protocols Manual* (Part Number T0103).

Setting ISDN Termination Resistance

Termination resistance is controlled by a set of switches located on the rear of the ISDN Daughtercard.

For the Vanguard 305 equipped with ISDN S/T daughtercard, it is assumed that most configurations will have the unit as the final device, and so 100Ω is the default setting of the termination resistance. This means DIP switches are set to the down position, as shown in Figure 2-6.

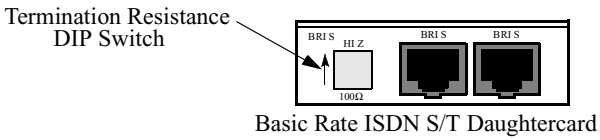


Figure 2-6. Setting Termination Resistance on the Rear Connector

If your Vanguard 305 is not the termination device, set the termination resistance to Hi-Z.

Note

The Vanguard 305 does not have to be powered off to change the switch settings. The change takes effect when you change the switch setting.

Wiring Configurations Requiring Termination Resistance

Figures 2-7 to 2-9 show three typical wiring configurations requiring the use of a terminating resistor. In these diagrams, TR indicates the location of the 100Ω Terminating Resistor, and NT1 indicates the ISDN switch.

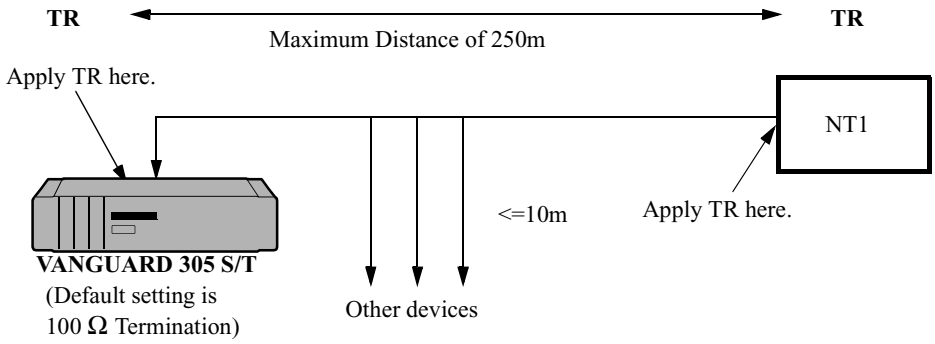


Figure 2-7. Short Passive Bus Configuration

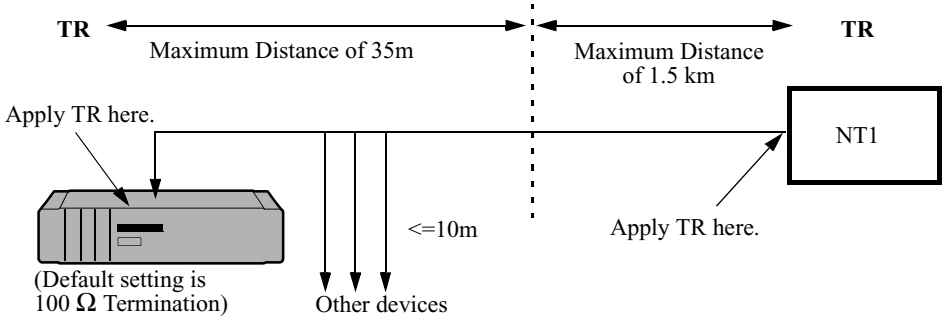


Figure 2-8. Extended Passive Bus Configuration

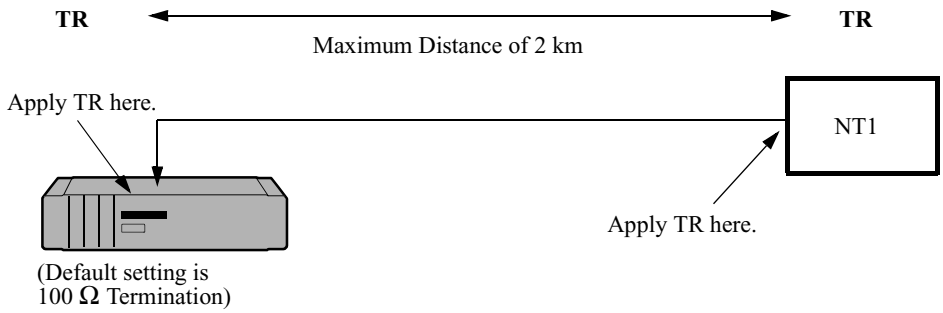


Figure 2-9. Point-to-Point Configuration

Chapter 3
Powering on the Vanguard 305

Overview

Introduction

This chapter describes:

- powering up the Vanguard 305
- interpreting LED display for power up diagnostics
- accessing the CTP

Powering On The Vanguard 305

Introduction

This section describes the sequence of events when you power up the Vanguard 305.

Powering On the Vanguard 305

Connect the power cord to the power supply outlet. Power on the Vanguard 305 using the power switch on the back panel of the unit.

Powerup Diagnostics

Introduction

This section describes diagnostics that run automatically when you power up the Vanguard 305.

Front Panel LEDs

The front panel LEDs on the Vanguard 305 help you follow the progress of the unit's powerup. Figure 3-1 illustrates the LEDs located behind the front panel of the Vanguard 305.

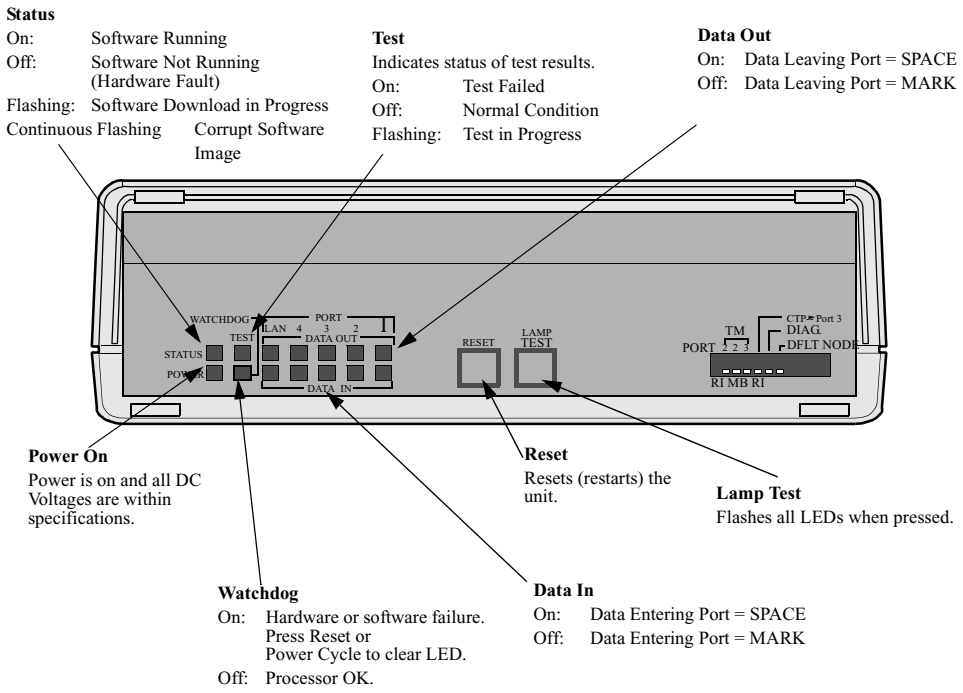


Figure 3-1. Vanguard 305 Front Panel LEDs

Powerup Sequence

This table shows the normal powerup sequence when you turn on the Vanguard 305.

Stage	*when*	*this indicates*
1	POWER light turns green.	Vanguard is receiving power.
2	STATUS light blinks at a slow rate.	Indicates software is being downloaded from Flash.
3	TEST light comes on and blinks five times.	Diagnostics executes for 30 seconds.
4	STATUS light stays off for up to 10 seconds, then turns green.	The option bundle is initializing your system configuration.
5	PORT/DATA OUT lights come on and go off in sequence.	Port lights remain on, depending on the configuration.

Hardware Failure

If the TEST light turns on and remains on, one or more of the diagnostic tests have failed, indicating there is a hardware problem. Contact Customer Support for possible repairs to your Vanguard 305.

Diagnostic Failure

If the TEST light does not blink at all, but the Status light is on, the diagnostic software image is corrupted. Perform a download of the software option bundle.

Powerup Failure

If the STATUS light blinks continuously, at a constant rate, the software bundle in Flash memory is corrupted. Perform a cold load of the software option bundle. See the *Software Installation and Coldloading Manual* (Part Number T0028) for more information.

Accessing the Control Terminal Port

Introduction

Once you have powered on the Vanguard 305, you can access the Control Terminal Port from the PC or terminal attached to the CTP port.

Note

This section does not provide all information about accessing the CTP. For more information on accessing and using the CTP refer to the *Vanguard Basic Configuration Manual* (Part Number T0113).

Procedure

Follow these steps to access the Vanguard 305 CTP Main menu:

Note

This procedure assumes that a PC or terminal is connected to the Vanguard 305 using the CTP access cable.

Step	*Action*
1	Set your terminal, or terminal emulation software, to VT100, 9600 bps, 8 bit, no parity, 1 stop bit.
2	Press ENTER until either an asterisk (*) or the OK prompt appears.
3	If you see OK, type **atds0**, then press ENTER. If you see the asterisk (*) type **.ctp**, then press ENTER. The CTP banner appears. If this banner does not appear, verify that these steps have been followed correctly.
4	Press ENTER at the password prompt, if no password has been set.

CTP Access Via Remote Telnet

Another way to connect to the CTP, after the node is configured and operational, is to access remotely via your established IP network by telneting into the node from an IP network-based personal computer or workstation. You can connect to the CTP by entering **atds0,** then press ENTER after the Vanguard 305 outputs the OK prompt.

CTP Access Via Remote X.25 or Frame Relay Network

If the Vanguard 305 is operating in an X.25 network, or if Frame Relay Annex-G is used to connect with other Vanguard nodes, you can access the Vanguard CTP remotely by making a Switched Virtual Circuit (SVC) call to the node and specifying subaddress 98.

Chapter 4
Vanguard 305 Software

Overview

Introduction

This chapter provides information on software for the Vanguard 305.

Operating Software

Operating software is compressed in FLASH memory and loaded into DRAM for operation. The Vanguard 305 supports these software Applications Ware packages:

- IP Applications Ware Package
- IP & IPX Applications Ware Package
- SNA Applications Ware Package
- Serial Protocol Applications Ware Package
- Multiservice Applications Ware Package
- Multimedia Applications Ware Package

See the *Software Release Notice* accompanying your Vanguard unit for more information on the software available for the Vanguard 305.

Obtaining Operating Software

Where to Get Operating Software

You can obtain operating software images for your Vanguard 305 from:.

1) the Vanguide CD-ROM, using the following path:

\Sfw_imgs\V305

2) the WWW, using the following URL:

www.vanguardms.com

Operating Software File Formats

Operating software files on the Vanguide CD-ROM and the World Wide Web adhere to the following filenaming formats:

Filename	*Description*
XXF01.xrc	where: • **XX** identifies the software release number. • **F** identifies the file as a Vanguard 305 software image. • **01** identifies the file as option #01. • **.xrc** identifies the file as a software image. XXF01.zip is a compressed version of the file.

Installing Software

Installation Method

Install software to the Vanguard 305 using one of the two methods listed below:

- Coldloader - Refer to the *Software Installation and Coldloading Manual* (Part Number T0028) for complete installation and coldloading procedure.
- Vanguide Application Set - Refer to the Vanguide Applications Ware documentation for complete installation and downloading procedures.

Note

The *Software Installation and Coldloading Manual* and all Vanguide Applications Ware documentation can be found on the Vanguide CD-ROM or on the WWW at this URL:

http://www.vanguardms.com/documentation

Appendix A
Specifications

Specifications

Introduction

This section describes the physical and environmental specifications and power requirements for the Vanguard 305.

Hardware

Hardware specifications include:

- 68360 processor
- Battery backed configuration memory
- Shelf life: 10 years
- Code compression in Flash memory

Memory

Two MB of Flash memory and four MB of DRAM reside on the motherboard. The total memory size of 12 MB includes an 8 MB SIMM in the motherboard's SIMM slot.

Software

The Vanguard 305 supports these software feature set licenses:

- IP Applications Ware Package
- IP & IPX Applications Ware Package
- SNA Applications Ware Package
- Serial Protocol Applications Ware Package
- Multiservice Applications Ware Package
- Multimedia Applications Ware Package

Environmental

The following environmental specifications must be adhered to:

- Operating temperature: 32° to 104° F maximum (0° to 40°C maximum)
- Storage temperature: -40° to +158°F (-40° to +70°C)
- Relative humidity: 0% to 95% (noncondensing)

Power Requirements

Vanguard 305 requires the following power:

- 100 to 240 VAC nominal at 47 to 63 Hz
- 31 watts

Power Supply Description

The Vanguard 305 is powered by a fixed-frequency, switch mode 35W power supply.

Physical

Vanguard 305 physical measurements include:

- Height: 3 inches (7.6 cm)
- Width: 8.5 inches (21.6 cm)
- Depth: 16 inches (40.6 cm)

Weight

Weight specifications include:

Product Component	*Weight*
Vanguard 305 base unit	6.9 lb (3.2 kg)
DSU Daughtercard	0.25 lb (0.2 kg)
DIM Site Daughtercard	0.25 lb (0.2 kg)
ISDN Daughtercard	0.25 lb (0.2 kg)
FXS/FXO Daughtercard	0.50 lb (0.4 kg)

Appendix B
Vanguard 305 Cabling

Overview

Introduction

This Appendix identifies the cables and pinout requirements for the Vanguard 305.

Daughtercard Cable Information

Cables for optional daughtercards are shipped with the daughtercards. If your Vanguard 305 is shipped with installed daughtercards, the cables are shipped with the Vanguard. For daughtercard installation and more cable information, please refer to the *Vanguard Daughtercard Installation Guide* (Part Number T0020).

CTP Access Cable

Specification

The CTP cable shipped with the Vanguard 305 has the following specifications:

- Connectors: RJ45 to DB25 Cable
- Color: Gray

Connector Pinout

The RJ45 to DB25 cable has the following pinout:

RJ45 Pin No.	Signal	DB25 Pin No.
1	Not used	5
2	DTR (output)	6
3	TxD (output)	3
4	Signal ground	7
5	Signal ground	7
6	RxD (input)	2
7	DCD (input)	20
8	Not used	4

The connector pins are numbered as indicated in the following diagram:

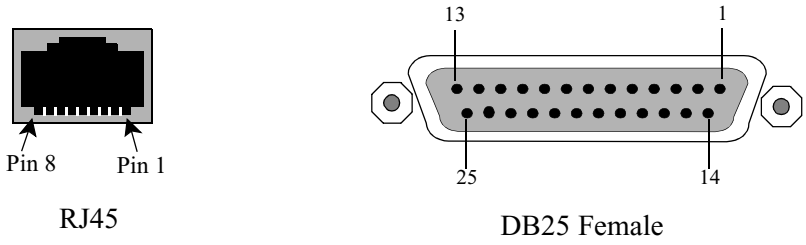


Figure B-1. RJ45 and DB25 Connector Pinout

Token Ring Access Cables

Specification

The Token Ring interface provides an STP and UTP connector. Only one connector can be used at one time. The STP cable and UTP cable are not shipped with the unit. Use the following type of cable:

STP (Shielded)	*UTP (Unshielded)*
DB9 Female - to - STP MAU (IBM 802.5)	Mod 8 Female - to - UTP MAU (Mod 8)

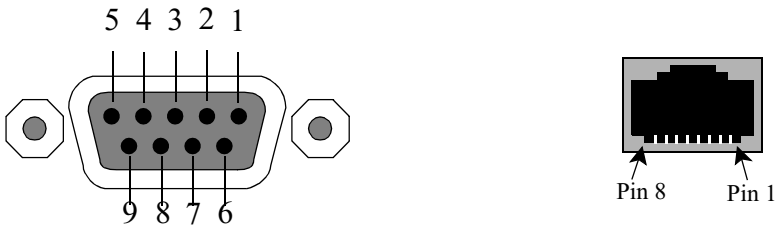
STP and UTP Connector Pinouts

The STP DB9 connector and UTP Mod8 have the following pinouts:

STP Pin No.	*Signal*
1	Receive +
2	LAN ground
3	LAN +5V
4	LAN ground
5	Transmit -
6	Receive -
7	LAN ground
8	LAN ground
9	Transmit +

UTP Pin No.	*Signal*
1	-
2	-
3	Transmit +
4	Receive +
5	Receive -
6	Transmit -
7	-
8	-

The connector pins are numbered as indicated in the following diagram:



DB9 Female (STP)

Mod 8 Female

Figure B-2. STP and UTP Connector Pinouts

FXS/FXO Daughtercard Cable

Specification

The voice relay cable shipped with the FXS/FXO Daughtercard has the following specification:

- Connectors: RJ11 to RJ11 Cable
- Color: Gray

Connector Pinout

The RJ11 connectors for the FXO and FXS port have the following pinout:

Pin No.	FXS		FXO	
	Name	Function	Name	Function
1		N/A		N/A
2		N/A	Aux B	External Handset
3	Loop B		Line B	
4	Loop A		Line A	
5		N/A	Aux A	External Handset
6		N/A		N/A

Warning

The FXS Interface should only be connected to an analog telephone handset and/or fax machine.

Warning

The FXO Interface should only be connected to an analog PBX line.

Warning

The FXS/FXO daughtercard has not been certified for use in a PSTN.

Dual FXS Daughtercard Cable

Specification

The cable shipped with the Dual FXS Daughtercard has the following specification:

- Connectors: RJ11 to RJ11 Cable
- Color: Gray

Connector Pinout

The RJ11 FXS port have the following pinout:

Pin No.	FXS	
	Name	Function
1		N/A
2		N/A
3	Loop B	
4	Loop A	
5		N/A
6		N/A

The FXS Interface should only be connected to an analog telephone handset and/or fax machine.

Dual E&M Daughtercard Cable

Specification

The cable shipped with the Dual E&M Daughtercard has the following specification:

- Connectors: RJ45 to RJ45 Cable
- Color: Gray

Connector Pinout

The RJ45 E&M ports have the following pinout:

Pin No.	*Signal*
1	SG
2	E
3	R1
4	T1
5	Ring
6	Tip
7	M
8	SB

RemoteVU Video Cables

Introduction

The RemoteVU Daughtercard requires the following cables:

- RJ45-to-RJ45 Camera Interface Cable
- BNC-to-BNC Cable

RJ-45 Connector - Camera Interface Connector Pinout

This table describes the RJ-45 connector - camera interface connector:

Pin	*Function*
1	EIA-232 data input
2	EIA-232 data output
3	EIA-485/422 positive data output
4	EIA-485/422 negative data output
5	EIA-485/422 negative data input
6	EIA-485/422 positive data input
7	+12V (current available = 50 mA)
8	Ground

ISDN Cable

Specification

The ISDN cable shipped with the ISDN Daughtercard has the following specification:

Interface	Connectors	Part Number
U interface (North America)	RJ11-to-RJ11	61766-02
S/T interface (Europe)	RJ45-to-RJ45	61545-01

Connector Pinout

The following table shows the pinouts for the RJ45 ISDN U and S/T connector.

Pin	U Interface		S/T Interface	
	Name	Function	Name	Function
1	Battery Status	No connection	PS 3+	No connection
2	Battery Status	No connection	PS 3-	No connection
3	---	No connection	TE NT +	TE to NT pair, no power connection
4	Signal	U interface tip or ring	NT TE +	NT to TE pair, no power connection
5	Signal	U interface tip or ring	NT TE -	NT to TE pair, no power connection
6	---	No connection	TE NT -	TE to NT pair, no power connection
7	Powering	No connection	PS 2 -	No connection
8	Powering	No connection	PS 2 +	No connection

The connector pins are numbered from right to left as indicated in the following diagram:

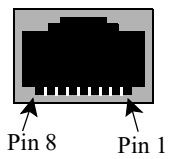


Figure B-3. ISDN Connector Pinout

Note

The ISDN connector can accept either an RJ11 or RJ45 connector. If you are using an RJ11, pin 1 and pin 8 are not used.

S/T ISDN Termination Resistance

For operation of the Vanguard 305 in Europe, you may need to set the terminal resistance. For more information on setting the terminal resistance, refer to the *Vanguard Daughtercard Installation Guide* (Part Number T0020).

DSU Daughtercard Cable

DSU Daughtercard Cable Pinout

The following table shows the pinouts for the RJ48S connector:

Pin	Signal Function
1	TX - RING
2	TX - TIP
7	RX - TIP
8	RX -RING

V.35/V.36 Cable

V.35/V.36 DCE Cable Pinout

The following table shows the DCE pinouts forV.35 and V.36 cables.

Pin	*Function/Signal Name*
1	SHIELD/FRAME GROUND
2	TRANSMITTED DATA A
3	RECEIVED DATA A
4	REQUEST TO SEND
5	CLEAR TO SEND
6	DATA SET READY
7	SIGNAL GROUND
8	DATA CARRIER DETECT
13	TRANSMIT CLOCK B
14	TRANSMITTED DATA B
15	TRANSMIT CLOCK A
16	RECEIVED DATA B
17	RECEIVE CLOCK A
18	RECEIVE CLOCK B
19	RECEIVE CLOCK B
20	DATA TERMINAL READY
21	TRANSMIT CLOCK B
22	EXTERNAL TRANSMIT CLOCK B
24	EXTERNAL TRANSMIT CLOCK A
25	(No Connection)

V.35/V.36 DTE Cable Pinout

The following table shows the DTE pinouts forV.35 and V.36 cables.

Pin	Function/Signal Name
1	SHIELD/FRAME GROUND
2	TRANSMITTED DATA A
3	RECEIVED DATA A
4	REQUEST TO SEND
5	CLEAR TO SEND
6	DATA SET READY
7	SIGNAL GROUND
8	DATA CARRIER DETECT
13	TRANSMIT CLOCK B
14	TRANSMITTED DATA B
15	TRANSMIT CLOCK A
16	RECEIVED DATA B
17	RECEIVE CLOCK A
18	RECEIVE CLOCK B
19	RECEIVE CLOCK B
20	DATA TERMINAL READY
21	TRANSMIT CLOCK B
22	EXTERNAL TRANSMIT CLOCK B
24	EXTERNAL TRANSMIT CLOCK A
25	TEST MODE (V.36 ONLY).

V.11 Cable

V.11 DCE Cable

The following table shows the DCE pinouts for the V.11 cable.

Pin	V.11	Function/Signal Name
1		SHIELD/FRAME GROUND
2	T (A)	TRANSMITTED DATA A
3	R (A)	RECEIVED DATA A
4	C (A)	CONTROL A
6	I (B)	INDICATION B
7		SIGNAL GROUND
8	I (A)	INDICATION A
13	S (B)	TRANSMIT CLOCK B
14	T (B)	TRANSMITTED DATA B
15	S (A)	TRANSMIT CLOCK A
16	R (B)	RECEIVED DATA B
17	*	RECEIVE CLOCK A
18	*	RECEIVE CLOCK B
19	*	RECEIVE CLOCK B
20	C (B)	CONTROL B
21	S(B)	TRANSMIT CLOCK B
22	X (B)	EXTERNAL TRANSMIT CLOCK B
24	X (A)	EXTERNAL TRANSMIT CLOCK A
*These V.11 signals are not used in the X.21 standard.		

V.11 DTE Cable

The following table shows the DTE pinouts for the V.11 cable.

Pin	Function/Signal Name
1	SHIELD/FRAME GROUND
2	TRANSMITTED DATA A
3	RECEIVED DATA A
4	CONTROL A
6	INDICATION B
7	SIGNAL GROUND
8	INDICATION A
13	TRANSMIT CLOCK B
14	TRANSMITTED DATA B
15	TRANSMIT CLOCK A
16	RECEIVED DATA B
17	RECEIVE CLOCK A
18	RECEIVE CLOCK B
19	RECEIVE CLOCK B
20	CONTROL B
21	TRANSMIT CLOCK B
22	EXTERNAL TRANSMIT CLOCK B
24	EXTERNAL TRANSMIT CLOCK A

V.24 Cable

V.24 DCE Cable

The following table shows the DCE pinouts for the V.24 cable. These pins are assigned double functions in the V.24 cable:

- Pin 15: Outputs TRANSMIT CLOCK if the port is configured for internal clocks. Otherwise it acts as a V.54 Loop 3 signal when connected to a modem.
- Pin 22: Used as the Ring Indicator output if the port is configured to emulate a dial modem. For this to work properly, the RI/TM switch of the port must be set to RI. When the RI/TM switch is set to TM, this pin acts as an input, and the TM output from the attached modem (pin 25 on the modem) comes into the 6500 on this pin.

Pin	*Function/Signal Name*
1	Shield/Frame Ground
2	TXD
3	RXD
4	RTS
5	CTS
6	DSR
7	Signal Ground
8	DCD
14	DATA RESTRAINT
15	TRANSMIT CLOCK or V.54 Loop 3 *
16	STANDBY INDICATOR
17	RECEIVE CLOCK
18	EXTERNAL RECEIVE CLOCK
20	DTR
21	V.54 Loop 2
22	RI/TM *
24	EXTERNAL TRANSMIT CLOCK
25	TEST MODE

V.24 DTE Cable

The following table shows the DTE pinouts for the V.24 cable.

Pin	Function/Signal Name
1	Shield/Frame Ground
2	TXD
3	RXD
4	RTS
5	CTS
6	DSR
7	Signal Ground
8	DCD
14	DATA RESTRAINT
15	TRANSMIT CLOCK
16	STANDBY INDICATOR
17	RECEIVE CLOCK
18	EXTERNAL RECEIVE CLOCK or V.54 Loop 3 *
20	DTR
21	V.54 Loop 2
22	(No Connection)
24	EXTERNAL TRANSMIT CLOCK
25	MAKE BUSY

Appendix C
Software License and Regulatory Information

In This Appendix

Introduction

This section contains the software license statement and regulatory declarations for the Vanguard 305.

Software License Terms And Conditions

IMPORTANT - PLEASE READ

ONLY OPEN THE PACKAGE, OR USE THE SOFTWARE IF YOU ACCEPT THE TERMS OF THIS LICENSE. BY BREAKING THE SEAL ON THIS DISK KIT / CDROM, OR IF YOU USE THE SOFTWARE, YOU ACCEPT THE TERMS OF THIS LICENSE AGREEMENT. IF YOU DO NOT AGREE TO THESE TERMS, PLEASE RETURN THE SOFTWARE TO PLACE OF PURCHASE FOR A FULL REFUND. THE FOLLOWING AGREEMENT IS A LEGAL AGREEMENT BETWEEN YOU (EITHER AN INDIVIDUAL OR ENTITY), AND VANGUARD MANAGED SOLUTIONS LLC, (FOR ITSELF AND ITS LICENSORS). THE RIGHT TO USE THIS PRODUCT IS SOLD ONLY ON THE CONDITION THAT YOU AGREE TO THE FOLLOWING LICENSE.

Grant of License. Subject to the following terms and conditions, Vanguard Managed Solutions, grants to you a non-exclusive license to use on a single piece of equipment only one copy of: 1) each of the Applications Ware software images contained on this disk (which may have been pre-loaded on the equipment) or as modified using the Vanguard Software Builder application, for which you have paid an associated license fee; 2) any additional software contained on this disk or pre-loaded on the equipment for which a license fee is required and if such license fee has been paid; and all remaining software contained on this disk (the Software). Please refer to the Applications Ware Software Release Notice for a listing of the software feature sets and their components which may be used under this license to modify the licensed Applications Ware software images using the Vanguard Software Builder application. You may make two copies of the Software, but only for backup, archival, or disaster recovery purposes. On any copy you make of the Software, you must reproduce and include the copyright and other proprietary rights notice contained on the copy we have furnished you of the Software.

Ownership. Vanguard Managed Solutions (or its supplier) retains all title, ownership and intellectual property rights to the Software and any copies, including translations, compilations, derivative works ()including built Applications Ware images) partial copies and portions of updated works. The Software is Vanguard Managed Solutions (or its supplier's) confidential proprietary information. You agree not to disclose it or make it available to anyone without Vanguard Managed Solutions written authorization. You will exercise no less than reasonable care to protect the Software from unauthorized disclosure. You agree not to disassemble, de-compile or reverse engineer the Software to the extent not prohibited by law.

Termination. This License is effective until terminated. This License will terminate immediately without notice from Vanguard Managed Solutions or judicial resolution if you fail to comply with any provision of this License. Upon such termination you must destroy the Software, all accompanying written materials and all copies thereof, and the sections entitled Limited Warranty, Limitation of Remedies and Damages, and General will survive any termination.

Limited Warranty. Vanguard Managed Solutions warrants for a period of ninety (90) days from Vanguard Managed Solutions or its customer's shipment of the Software to you that (i) the disk(s) on which the Software is recorded will be free from defects in materials and workmanship under normal use and (ii) the Software, under normal use, will perform substantially in accordance with Vanguard Managed Solutions published specifications for that release level of the Software. The written materials are provided "AS IS" and without warranty of any kind. Vanguard Managed Solutions entire liability and your sole and exclusive remedy for any breach of the foregoing limited warranty will be, at Vanguard Managed Solutions option, replacement of the disk(s), provision of downloadable patch or replacement code, or refund of the unused portion of your bargained for contractual benefit up to the amount paid for this Software License.

THIS LIMITED WARRANTY IS THE ONLY WARRANTY PROVIDED BY VANGUARD MANAGED SOLUTIONS, AND VANGUARD MANAGED SOLUTIONS AND ITS LICENSORS EXPRESSLY DISCLAIM ALL OTHER WARRANTIES, EITHER EXPRESS OF IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. VANGUARD MANAGED SOLUTIONS DOES NOT WARRANT THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE, OR THAT DEFECTS IN THE SOFTWARE WILL BE CORRECTED. NO ORAL OR WRITTEN REPRESENTATIONS MADE BY VANGUARD MANAGED SOLUTIONS OR AN AGENT THEREOF SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY. VANGUARD MANAGED SOLUTIONS DOES NOT WARRANT ANY SOFTWARE THAT HAS BEEN OPERATED IN EXCESS OF SPECIFICATIONS, DAMAGED, MISUSED, NEGLECTED, OR IMPROPERLY INSTALLED. BECAUSE SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF IMPLIED WARRANTIES, THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

Limitation of Remedies and Damages. Regardless of whether any remedy set forth herein fails of its essential purpose, IN NO EVENT SHALL VANGUARD MANAGED SOLUTIONS OR ANY OF THE LICENSORS, DIRECTORS, OFFICERS, EMPLOYEES OR AFFILIATES OF THE FOREGOING BE LIABLE TO YOU FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR SIMILAR DAMAGES WHATSOEVER (including, without limitation, damages for loss of business profits, business interruption, loss of business information and the like), whether foreseeable or unforeseeable, arising out of the use or inability to use the Software or accompanying written materials, regardless of the basis of the claim and even if Vanguard Managed Solutions or a Vanguard Managed Solutions representative has been advised of the possibility of such damage. Vanguard Managed Solutions liability to you for direct damages for any cause whatsoever, regardless of the basis of the form of the action, will be limited to the price paid for the Software that caused the damages. THIS LIMITATION WILL NOT APPLY IN CASE OF PERSONAL INJURY ONLY WHERE AND TO THE EXTENT THAT APPLICABLE LAW REQUIRES SUCH LIABILITY. BECAUSE SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

Transfer. In the case of software designed to operate on Vanguard Managed Solutions equipment, you may not transfer the Software to another party except: (1) if you are an end-user, when you are transferring the Software together with the Vanguard Managed Solutions equipment on which it operates; or 2) if you are a Vanguard Managed Solutions licensed distributor, when you are transferring the Software either together with such Vanguard Managed Solutions equipment or are transferring the Software as a licensed duly paid for upgrade or update replacement of a prior version of the Software, however, you shall not re-transfer the upgraded or updated replaced prior version of the Software. You may transfer all other Software, not otherwise having an agreed restriction on transfer, to another party. However, all such transfers of Software are strictly subject to the conditions precedent that the other party agrees to accept the terms and conditions of this License, and you destroy any copy of the Software you do not transfer to that party. You may not sublicense or otherwise transfer, rent or lease the Software without our written consent. You may not transfer the Software in violation of any laws, regulations, export controls or economic sanctions imposed by the U.S. Government.

U.S. Government Users. If you are a U.S. Government user, then the Software is provided with "RESTRICTED RIGHTS" as set forth in subparagraphs (c)(1) and (2) of the Commercial Computer Software-Restricted Rights clause at FAR 52 227-19 or subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013, as applicable.

General. Massachusetts law governs this license. The terms of this license are supplemental to any written agreement executed by both parties regarding this subject and the Software Vanguard Managed Solutions is to license you under it, and supersedes all previous oral or written communications between us regarding the subject except for such executed agreement. It may not be modified or waived except in writing and signed by an officer or other authorized representative of each party. If any provision is held invalid, all other provisions shall remain valid, unless such invalidity would frustrate the purpose of our agreement.

Product Declarations and Regulatory Information

Introduction

The following sections provide information about standards compliance, safety statements, and ISDN Type Approvals.

Agency Approvals

This table lists the agency approvals to which the Vanguard 305 complies:

Requirements	*Approvals*
Electro Magnetic Compatibility	FCC Part 15, Class B/Canadian DOC CISPR 22 Class B EN 55022:1994, Class B AS/NZ 3548, Class B EN 50082-1: 1992
Safety	EN60950: 1992 with Amendments 1 and 2 (Europe) CSA 950 UL Listed per UL 1950 AS/NZS 3260 (Australia)
Telecom (PTT)	FCC Part 68 Industry Canada CS-03AUSTEL

The following sections provide information about standards compliance, safety statements, and ISDN Type Approvals.

Conformity Declaration

The Vanguard 305 Digital Terminating Equipment conforms with:

1) The type as described in EC Type-Examination certificate Number BABT/95/2939

2) The following Common Technical Regulations and/or normative documents:

- 90/002 S/R2
- I-CTR 2 based on NET 2:1994 clauses:

8.1 (X.21)

8.2.1.1 (cable)

8.2.2.1 and 8.2.4.1 (V.28)

8.2.2.2 and 8.2.4.2 (V.35)

following the provisions of Directive 91/263/EEC.

- Commission Decision 94/797/EC

CE Marking

One of the marks in the following diagram appears on each of the Vanguard products that are ISDN compatible, and the statement that follows explains its significance.

CE

Figure C-1. CE Approvals label

This product is CE marked to indicate compliance with the following European Directives.

- 73/23/EEC, Low Voltage Directive (Safety), as amended by Council Directive 93/68/EEC
- 91/263/EEC, Terminal Directive
- 89/336/EEC, EMC Directive, as amended by Council Directives 92/31/EEC and 93/68/EEC

The CE mark indicates the Notified Body granting the approval under 91/263/EEC (BABT).

German Federal Approvals Office

Vanguard ISDN carries the approval mark of the German Federal Approvals Office for Telecommunications. The approval mark shows the national emblem, the letters BZT (the Federal Approvals Office letters), and the type approval number (A120187F) that indicates the type of approval given. This label, as shown in Figure C-2, appears on the bottom of your Vanguard 305.

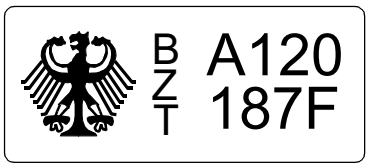


Figure C-2. German Federal Approvals Label

French DRG Approval

Vanguard ISDN also carries the DRG approval mark of the French Ministère des Postes et Télécommunications. This indicates that Vanguard ISDN is approved for connection to the French Euro-Numeris (VN4+) ISDN network service. The label appears on the bottom of your Vanguard 305, and shows approval number 96089 B.

Figure C-3. French Approvals Label

Netherlands Approval

Vanguard ISDN also carries the approval mark of the Ministerie Van Verkeer En Waterstaat. This indicates that Vanguard ISDN is approved for connection to the Netherlands D-Packet ISDN network service. The label appears on the bottom of your Vanguard 305, and shows approval number NL 96211204.

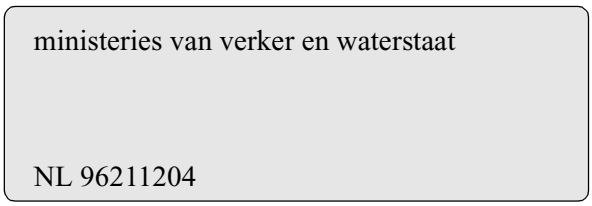


Figure C-4. Netherlands Approvals Label

Radio Frequency Interference Regulations

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, CISPR 22, EN 55022, and AS/NZ 3548. These limits are designed to provide reasonable protection against interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician to help.

Changes or modifications not expressly approved by Vanguard Managed Solutions could void the user's authority to operate the equipment.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

This product was verified under test conditions that included use of shielded data terminal equipment cables. Use of different cables will invalidate verification and increase the risk of causing interference to radio and TV reception.

You can obtain the proper cables from Vanguard Managed Solutions.

Industry Canada

The Vanguard 305 is Industry Canada certified in accordance with CS-03, Issue 8; Certification No. 109 6725 A:

> The Industry Canada 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 situations.
>
> 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.

Avis D'Industrie Canada

Avis:

L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des résaux de télécommunications, comme le prescrivent les documents concernants les exigences technique relatives au matériel terminal. Le Ministére n'assure toutefois pas que le matériel fonctinnoera à la satisfaction de l'utilisatuer.

Avant d'installer ce matérial, l'utilisatuer doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunications. Le materiél doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la comformité aux conditions énoncée ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être cordonnées par un represéntant désigné par le fournisseur. L'entreprise de télécommuncations peut demander a l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvias fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les files de mise a la terre de la source d'energie électrique, des lighes téléphoniques et des canalistions d'eau metalliques, si'l y en a, sont raccordés ensemble. Cette précaution est particuliérement importante dan les régions rurales.

Avertissement: l'utilisateur ne doit pas tenter de faire ces raccordements lui-même, il doit avoir recours à un services d'inspection des installations électriques, ou à un électricien, selon le cas.

Notification of Canadian Requirements

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

FCC Part 68 and Telephone Company Procedures and Requirements for DSU and ISDN Interfaces

Introduction

Before the Vanguard 305 can be connected to the network, you must:

- Provide the local telephone company with the equipment's registration number (AT9USA-22886-DD-N)
- Order the proper connections

Note

This information is for North American use only.

How to Order Connections

To order the proper connections, provide the telephone company with the following information:

- Interface type
- Required USOC jack connector number
- Service code
- Facility interface codes

Interface Type	*USOC Jack Connector*	*Service Code*	*Facility Interface Code*
56-kps digital interface	RJ48S	6.0F	04DU5-56
ISDN "U" Interface	RJ49C	6.0Y	02IS5
ISDN "S/T" Interface	---------	6.0F	02IS5
Fractional T1 Interface	RJ48C	6.0F	04-DU9-BN
V.34 Modem Interface	RJ11C	---------	---------

Troubleshooting Your Connection

If any of your equipment is not operating correctly, immediately remove it from the telephone line before it harms your network. If the telephone company notes the problem, they may temporarily disconnect your service. They will notify you in advance of the disconnection, when possible.

If advance notice is not feasible, you will be notified as soon as possible. When you are notified, you will be given the chance to correct the problem and be informed of your right to file a complaint with the FCC.

Customer-Provided Telephone Equipment

FCC regulations and telephone company procedures prohibit connection of customer-provided equipment to telephone company-provided coin service (central office-implemented systems). Connection to party lines is subject to state tariffs.

Occasionally, the telephone company may make changes in their equipment, operations, or procedures. If these changes affect your equipment or service, the telephone company will provide written notice so you can make the necessary changes to maintain uninterrupted service.

Contact your telephone company if you have any questions about your telephone line.

In some circumstances, the telephone company may ask you for information about your equipment that is connected to the telephone line. Within the United States (at the request of the telephone company), you should provide your equipment's FCC registration number. This number is located on the unit's label

Limited Warranty

Vanguard Managed Solutions, LLC, warrants that the Product will conform to its then-current published specifications and will be free from defects in materials and workmanship under normal use and service for a period of **(ONE) 1 YEAR** from the date of purchase by the original end user.

During the warranty period, Vanguard Managed Solutions will at its option and at no charge either repair a defective Product (using either new or reconditioned parts) or replace it (with a new or reconditioned Product) if you return it freight prepaid to the factory or service center Vanguard Managed Solutions designates. If Vanguard Managed Solutions is unable within a reasonable time to repair or replace your item, Vanguard Managed Solutions may instead elect to accept return of the unit and refund to you the purchase price you paid for it. Vanguard Managed Solutions will pay freight costs to ship any repaired or replacement unit to you.

VANGUARD MANAGED SOLUTIONS MAKES NO REPRESENTATION OR OTHER WARRANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED. WITHOUT LIMITING THIS PROVISION, VANGUARD MANAGED SOLUTIONS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THE REMEDIES PROVIDED HEREIN ARE EXCLUSIVE. UNDER NO CIRCUMSTANCES WILL VANGUARD MANAGED SOLUTIONS BE LIABLE FOR LOSS OF DATA, REPROCUREMENT COSTS, LOST REVENUE OR PROFITS, OR FOR ANY OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF THEY WERE FORESEEABLE OR YOU HAVE INFORMED VANGUARD MANAGED SOLUTIONS OF THEIR POTENTIAL.

Some states do not allow the exclusion or limitation of incidental or consequential damages or exclusions of implied warranties or limitations on the duration of implied warranties, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

This warranty does not apply to any Product which has been subjected by you or a third party to (a) operating or environmental conditions in excess of Vanguard Managed SolutionÕs written specifications or recommendations; (b) damage, misuse or neglect; or (c) improper installation, repair or alteration. This warranty also excludes expendable items, such as lamps, fuses, or other parts which fail from normal use. Vanguard Managed Solutions does not guarantee the integrity of data or warrant that the equipment will operate uninterrupted or error free.

To take advantage of this warranty, you must provide proof of purchase which indicates the date of your purchase in order to obtain warranty service.

This warranty applies only to hardware manufactured by or for Vanguard Managed Solutions and identified by the Vanguard Managed Solutions trademark, trade name or product identification logo affixed to them. For the warranty applicable to software, please refer to the Software License which accompanies the software.

Introduction

The following sections apply to U.S.A. customers only. Non-U.S.A. customers with questions or concerns regarding return procedures should contact their Vanguard Managed Solutions subsidiary or distributor.

Equipment Return Procedures

If you have questions about equipment return procedures, on-site service or unit exchange service call the Vanguard Managed Solutions Technical Support Center at (800) 544-0062 for advice and assistance.

In Case of Damage

If the equipment is damaged in transit, contact the shipper.

If you have additional concerns in case of failure, about missing parts, or to return equipment, contact your nearest Vanguard Managed Solutions representative.

For Locations	*Contact...*
Inside the United States	Vanguard Managed Solutions, LLC 575 West Street, Mansfield, MA 02048-1193 Phone (800) 544-0062.
Outside the United States	the nearest Vanguard Managed Solutions distributor. For a listing of our Sales and Service Offices, visit our Web site at: **http://www.vanguardms.com/**

Expiration of Lease

To return equipment upon expiration of a lease agreement, contact the Vanguard Managed Solutions Customer Operations Center at (800) 446-0144 for return authorization and instructions. You will be asked to provide the following information:

- Product name and description
- Serial number
- Customer order number
- Reason for return

Factory Repair

To return equipment for factory repair, call the Vanguard Managed Solutions Technical Support Center at (800) 544-0062, for return authorization and instructions. When you call, you will be given a Return Material Authorization (RMA) control number. Mark this number clearly on the shipping container for ease of identification and faster service. The RMA control number provides a convenient tracking reference for both parties. Please have the following information available for each piece of equipment you return:

- Product name and description
- Serial number
- Failure symptoms

Packaging Guidelines for Equipment Return

Data communications equipment or parts that are to be returned to Vanguard Managed Solutions for any reason must be properly packaged to prevent damage in shipment and handling.

If the original packing material and shipping container are available, reuse these items to return equipment. If these items are not available, it is your responsibility to package the contents in a manner that protects the equipment from damage during normal shipping and handling. Responsibility for damage to equipment during transit must be resolved between you and the carrier. Vanguard Managed Solutions can provide you with specific packaging instructions upon request.

Index

U

V

W