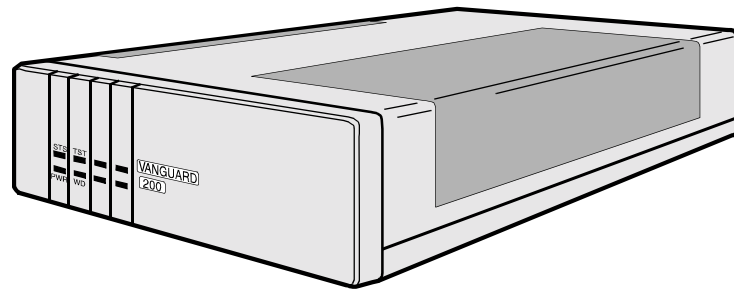


Vanguard Managed Solutions



Vanguard 200 Installation Manual

Notice

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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 and EN 55022. 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 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.

Notice (continued)

Declaration of Conformity

The Vanguard 200 is compliant with the following European Union Directive and Common Technical Regulations:

- The type as described in EC Type-Examination certificate Number BABT/95/2487
- 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.

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

- 73/23/EEC Low Voltage Directive (Safety)
- 91/263/EEC Terminal Directive
- 89/336/EEC EMC Directive

The number 168 in the CE mark indicates the Notified Body granting the approval under 91/263/EEC (BABT). The approval number is AA601576.

NOTE: Compliance with the above directives may only be assured when the equipment is installed and operated in accordance with the instructions for use and for the purpose for which it is intended.

CE168X

Part No. T0017 Revision E
Publication Code: RC
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To comment, use the Customer Response Card located in this manual,
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Overview

Introduction This manual covers features, hardware, installation, applications, and specifications for Vanguard 200.

Audience This manual is intended for users of the Vanguard 200.

Software Revision Level Refer to the Software Release Notice to determine which releases support the Vanguard 200.

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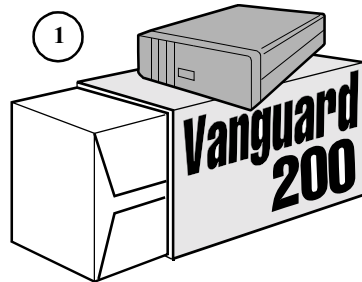
<i>Product</i>	<i>Company/Organization</i>
Adobe Acrobat	Adobe Inc.
Crosstalk	Digital Communications Associates, Inc.
HyperTerminal	Hilgreave, Inc.
OS/2	IBM
ProComm	Datastorm Technologies, Inc.
Vanguard	Vanguard Managed Solutions
Vanguide	Vanguard Managed Solutions
Windows	Microsoft Corporation

About This Manual (continued)

How to Use This Manual

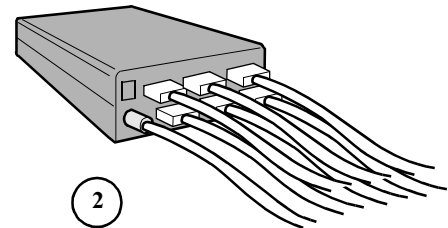
Follow these steps to use this manual to install and configure your Vanguard 200.

Familiarize Yourself with the Vanguard 200



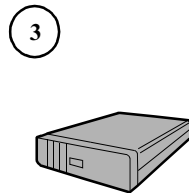
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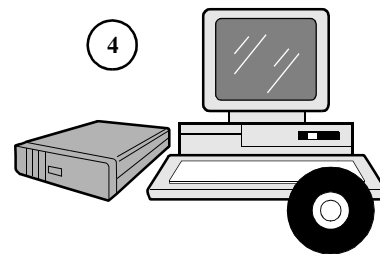
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About This Manual (continued)

Chapter Descriptions

This table briefly describes each chapter of this manual.

<i>This section...</i>	<i>Describes...</i>
Chapter 1, About the Vanguard 200	the Vanguard 200.
Chapter 2, Installing Vanguard 200 Hardware	the shipment contents, hardware installation and cabling,
Chapter 3, Powering On the Vanguard 200	the power-up sequence for the Vanguard 200 and how to access the Control Terminal Port.
Chapter 4, Vanguard 200 Software	how to install operating software in the Vanguard 200.
Chapter 5, Configuring the Vanguard 200 for DSU Operation	how to configure the Vanguard 200 for DSU operation.
Appendix A, Specifications	the physical and environmental specifications and power requirements for the Vanguard 200.
Appendix B, Troubleshooting Your Vanguard 200	actions you can take to correct problems you may encounter with your Vanguard 200.
Appendix C, Appendix	software license and regulatory information.

About This Manual (continued)

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 internet site.

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 service representative.

World Wide Web Check our internet site for the latest documentation:
<http://www.vanguardms.com/documentation>

Special Notices and Translations

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

Særlige overskrifter

Følgende overskrifter fremhæver nogle af oplysningerne i vejledningen. De tjener hvert et specifikt formål og vises i følgende format:

■Bemærk

Bemærk anvendes til at fremhæve vigtig information.



Forsigtig

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



Advarsel

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

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

Eritysilmoitukset

Seuraavat ilmoitukset korostavat tiettyjä oppaan tietoja. Kullakin on oma erikoistarkoituksensa ja ne esitetään seuraavassa muodossa:

■Huomaa

Huomautusta käytetään korostamaan tärkeitä tietoja.



Vaara

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



Varoitus

Varoitus on kaikkein vakavin ilmoitus ja se kertoo mahdollisesta loukkaantumiseriskistä.

French

Messages spéciaux

Les messages suivants mettent en valeur certaines informations dans le guide. Chacun d'eux remplit une fonction spéciale et est affiché dans le format indiqué :

■Important

Important est utilisé pour souligner des informations critiques au sujet d'une procédure.



Mise en Garde

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



Avertissement

Un avertissement constitue le message le plus sérieux, 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, daß Nichtbefolgung zu Software-, Hardware- oder Datenschäden führen kann.



Warnung

Eine Warnung weist Sie darauf hin, daß ernsthafte Körperverletzungsgefahr besteht.

Italian

Simboli speciali

I seguenti simboli, ciascuno con una speciale funzione, evidenziano determinate informazioni all'interno del manuale. Il formato è 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, all'hardware o ai dati.



Avvertenza

Questo tipo di avvertimento indica la presenza di condizioni di rischio che possono causare lesioni fisiche. Si tratta del simbolo più 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が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 håndboken. Hver merknadstype har en spesiell hensikt og vises på følgende format:

■Merk

Merk brukes for å fremheve viktig informasjon.



Forsiktig

Forsiktig gir deg informasjon om situasjoner som kan føre til skade på 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 realçam certas informações neste guia. Cada um deles serve um objectivo especial e é visualizado no formato apresentado:

■Nota

Nota é utilizado para realçar qualquer informação importante.



Atenção

Atenção facultar-lhe informações que, se não forem cumpridas, poderão provocar danos no software, hardware ou nos dados.



Cuidado

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

Spanish/Spain

Notificaciones especiales

Las siguientes notificaciones ponen énfasis sobre determinada información de la guía. Todas tienen un propósito especial y se muestran con el formato siguiente:

■Nota

Las notas se utilizan para destacar determinada información de importancia.



Advertencia

Las advertencias le proporcionan información que debe seguirse, si no desea que el software, el hardware o los datos puedan verse dañados.



Aviso

Los avisos son las notificaciones de carácter más importante e indican la posibilidad de daños físicos para el usuario.

Swedish

Speciella beteckningar

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

■OBS!

OBS! används för att betona viktig information.



Viktigt

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



Varning

Varning är 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 VanguardMS representative or visit this website for product, sales, support, documentation, or training information:

<http://www.vanguardms.com>

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

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Document Title: Vanguard 200 Installation Manual

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Please rate this document for usability:

Excellent Good Average Below Average Poor

What did you like about the document? _____

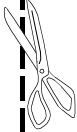
What information, if any, is missing from the document? _____

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 200

Overview

Introduction

The Vanguard 200 Frame Relay Access Device (FRAD) allows a diverse combination of terminals, PCs, workstations, and controllers to use public and private frame relay service for interconnection to remote PCs, LANs, or hosts. Vanguard 200 can also connect to public or private X.25 services and provides the capability to migrate to frame relay as those services become available.

The Vanguard 200 is shown in Figure 1-1.

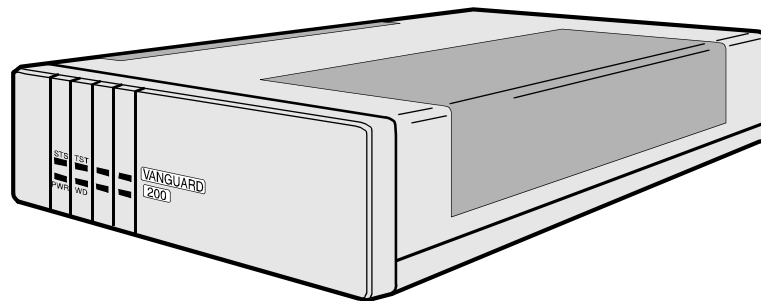


Figure 1-1. The Vanguard 200

Features

Standard Features The Vanguard 200 offers the following standard features:

- six ports
- SNMP manageable
- Multiprotocol support
- software download through Trivial File Transfer Protocol (TFTP) or direct connection using a PC communication application
- RFC 1490 encapsulation
- Frame Relay aggregate
- Switched 56 kbps support
- 2 Megabytes of FLASH memory
- 3 Megabytes of DRAM (expandable to 5 Megabytes)

CTP Port 6, is used as the Control Terminal Port (CTP) for configuring, reporting, and troubleshooting the Vanguard 200. CTP management support is not provided for the Integral DSU.

DSU Functionality The DSU functionality provides a 56 kbps, point-to-point DDS1 interface that conforms to AT&T 62310 or ANSI T1E1.4/91-006. Switched 56 kbps circuits with X.25 backup ports are supported to provide high-speed, dial backup for the Vanguard 200.

Switched 56 kbps relies on the Vanguard’s DSU DIM/EIM hardware to provide faster dial and answer capability than possible via modem.

The DSU is FCC Part 68 registered.

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

Port Configuration Vanguard 200 supports six ports that can be configured for serial links or terminal devices. The common applications are to connect five serial terminal devices to the network or four serial devices with two network links, one of which could be used for link failure recovery. All six ports may be configured as network ports.

<i>This configuration...</i>	<i>...offers</i>
6-port FRAD	<ul style="list-style-type: none"> • 2 DIM Port interfaces, which can be ordered as V.24, V.35, V.36, or V.11 • 4 V.24 interfaces
6-port FRAD with DSU	<ul style="list-style-type: none"> • 1 DIM Port interface, which can be ordered as V.24, V.35, V.36, or V.11 • 4 V.24 interfaces • 1 DSU DIM interface

Software Functionality

Introduction

This section describes software functionality for the Vanguard 200.

Multiprotocol Support

Support includes X.25, SDLC, PPP, frame relay, Async, IP Routing, and PPP, as well as many other serial protocols. Refer to the Software Release Notice (SRN) accompanying your unit for a complete listing of protocols supported by the Vanguard 200.

Software Image Options

Vanguard 200 offers multiprotocol access, running a variety of protocols, depending on what software image option you choose. Vanguard 200 must include one of the available software image options. Refer to the current release's Software Release Notice for the available image options.

Memory Mapping up to Release 4.33

The processor card used in the Vanguard 200 has 3 MB of RAM and has slots for an 2 additional MB of RAM. Of those 3 MB, currently 2 MB are reserved for holding executable software, loaded from the FLASH memory. The remaining 1 MB is used to contain information used by the software, along with buffers to hold user data passing through the node. If the extra 2 MB is installed on the card, they can hold either more software or more buffers.

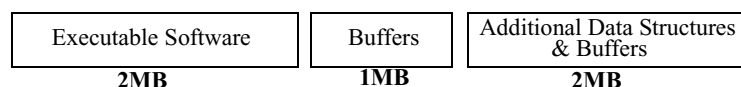


Figure 1-2. Memory Map Prior to Release 4.35

Memory Mapping From Release 4.35

From Release 4.35 on, the Vanguard 200 software images are larger than the 2 MB reserved area. The solution is to change how this memory is used (memory mapping). Rather than dividing the memory into the 1 and 2 MB sections, it will be treated as a contiguous 3 MB section. The code will be loaded into the 3 MB contiguous section, and whatever RAM remains will be used for data structures and buffers. If the extra 2 MB is available, it will be tacked on to form a contiguous 5 MB section. Again, code will be loaded into the 5 MB contiguous section and whatever is left will be used for data structures and buffers.

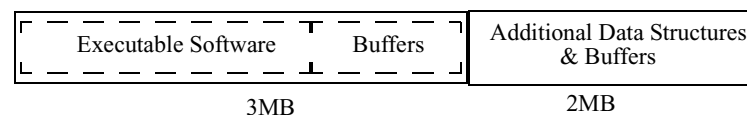


Figure 1-3. Memory Map Change for Release 4.35

FLASH Software Images

Vanguard 200 software will automatically boot up from FLASH when the node is powered up.

There may appear to be a smaller buffer pool (that is, fewer buffers) since some of the memory previously used for buffers is now used for executable code.

The Vanguard 200 FLASH software will run on any 6505/6507/6525 CPU+ card, in a standalone enclosure, provided that a Release 4.35 Vanguard 200 PROM set has been installed on the CPU+ card. The Release 4.35 Vanguard 200 PROM set is available for existing Vanguard standalone units by ordering the Vanguard upgrade kit. Consult your sales representative for more information. The Vanguard 200 FLASH software images will not run in a multi-CPU node. The node will continuously reboot if a Vanguard 200 software image is downloaded into a multi-CPU node.

Base PROM Upgrade

Vanguard 200 units with base PROM version 1.0 and greater will support coldloading. Units with base PROM versions below 1.0 do not support coldloading and require upgrades for coldloading support. To determine the base PROM version installed in the Vanguard 200, look at the Node Statistics menu in CTP.

Upgrade units with base PROM versions below 1.0 by replacing the base PROM chip and ID chip. The *Vanguard Daughtercard Installation Manual* (Part Number T0020) provides information on replacing these chips. To order upgrades refer the table below:

Product Description	Product Code
PROM only upgrade	68258
PROM and FLASH upgrade	68286
PROM and ID upgrade	68260

FLASH Memory

FLASH memory allows the node's software to be upgraded, or its software application package to be changed locally or across the network.

Optional Integral DSU

What the DSU Feature Offers

The optional DSU interface provides a 56 kbps, point-to-point DDS1 interface for North American service that conforms to AT&T 62310 or ANSI T1E1.4/91-006. The DSU is FCC Part 68 registered.

DSU Functionality

The DSU interface consists of two hardware modules:

- A DSU Digital Interface Module (DSU DIM)
- An External Interface Module (EIM)

The DSU DIM and EIM function cooperatively to provide a DSU interface; therefore, they must be installed together for proper operation. The DSU DIM module powers the EIM and also performs the data translation functions.

Clocking

The Integral DSU DIM normally uses clocking derived from the network interface as shown in Figure 1-4, but can also be configured to originate the clocking, thus providing the standard DSU and CSU loopbacks.

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

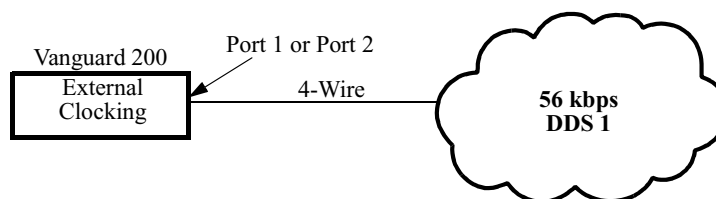


Figure 1-4. Clocking

Optional Features

The following are optional Vanguard 200 features:

- 2 Megabyte expansion memory module
- Integral 56 kbps DSU for North American use
- V.24, V.35, V.36, V.11 DIM interface

Target Application Environment

Introduction

This section describes target applications for the Vanguard 200.

SLIP Application

Figure 1-5 shows a Vanguard 200 providing SLIP access for an attached PC. The Vanguard 200 will use an integral DSU to provide a connection to a public or private frame relay network. A Vanguard 6520 is connected at the other end of the frame relay network to provide a connection to a SLIP host via an ethernet connection.

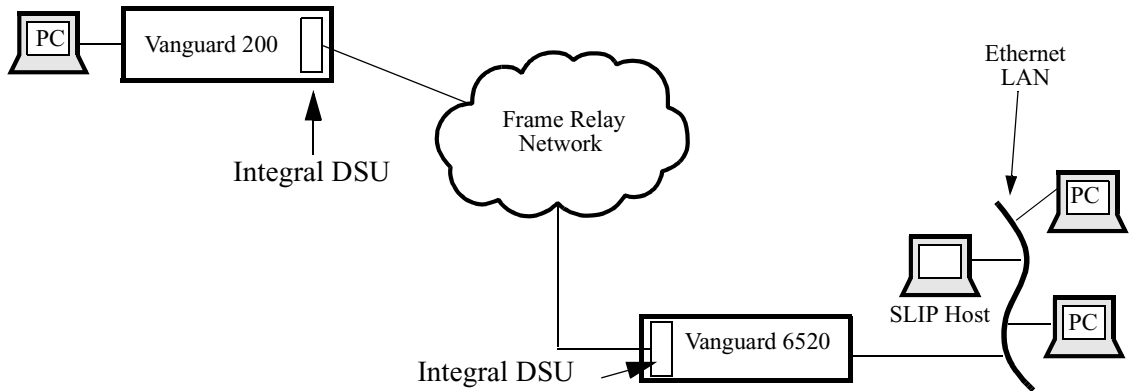


Figure 1-5. SLIP Application

SDLC to LLC Application

Figure 1-6 shows a Vanguard 200 providing SDLC TPAD access for an Establishment Controller. The Vanguard 200 will use an external DSU to provide a connection to a public or private frame relay network. A Vanguard 6520 will convert the SDLC frames to LLC frames to be transmitted on the Token Ring for the attached 3745 FEP.

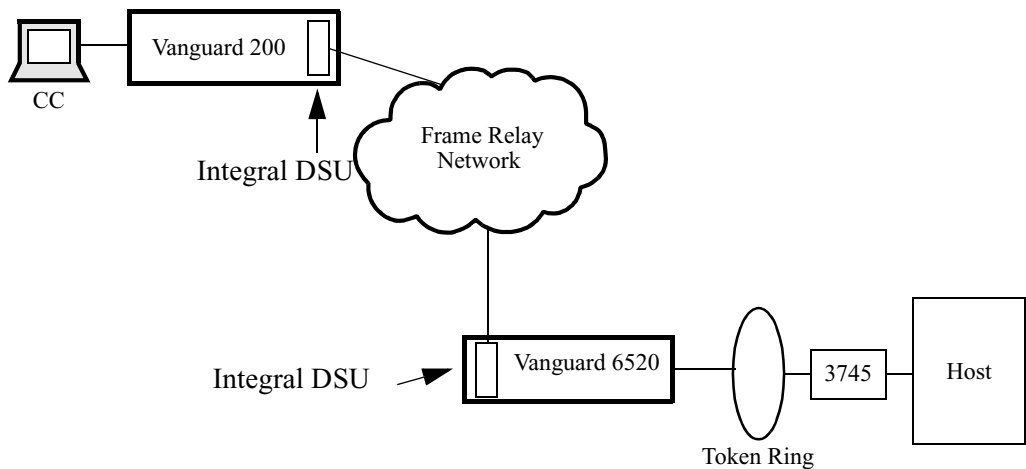


Figure 1-6. SNA/SDLC Application

NCR Bisync Application

Figure 1-7 shows a Vanguard 200 providing NCR Bisync access for an attached cluster controller. The Vanguard 200 uses an integral DSU to provide a connection to a public or private frame relay network. A Vanguard 6520 is connected at the other end of the Frame Relay network to provide a connection to the attached NCR host.

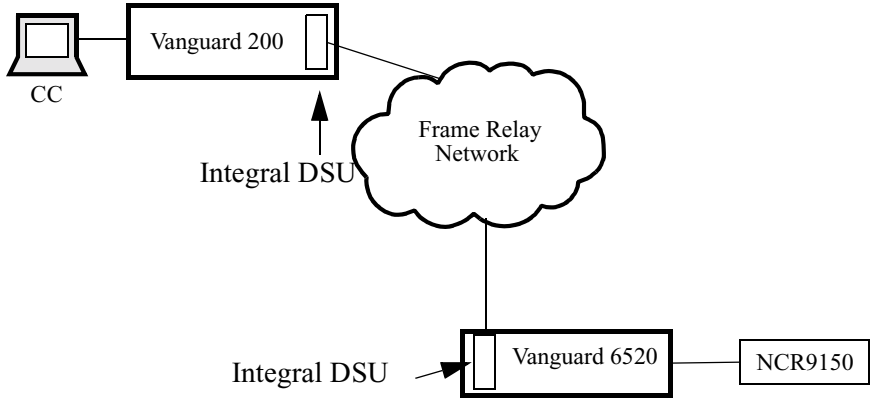


Figure 1-7. NCR Bisync Application

Chapter 2

Installing Vanguard 200 Hardware

Overview

Introduction

This chapter describes installation of Vanguard 200 hardware.

Follow these steps

This table lists the steps you need to perform and shows you where to look for information on installing the Vanguard 200:

Step	To Perform This Action	Refer to This Procedure
1	Check the contents of the shipping package to make sure everything is included.	“Unpacking and Checking Your Shipment Content” section on page 2-2.
2	Choose a site for the Vanguard 200.	“Choosing a Site” section on page 2-4.
3	Connect cables for the Vanguard 200.	“Cabling the Vanguard 200” section on page 2-7.
4	Setting the from panel dip switch.	“Front Panel DIP Switch Definitions” section on page 2-11.

Unpacking and Checking Your Shipment Content

Introduction

Before you install the Vanguard 200, unpack the shipment and check that your shipment contents are complete.

Unpacking the Vanguard 200

Figure 2-1 shows how to properly unpack the Vanguard 200 from its shipping carton.

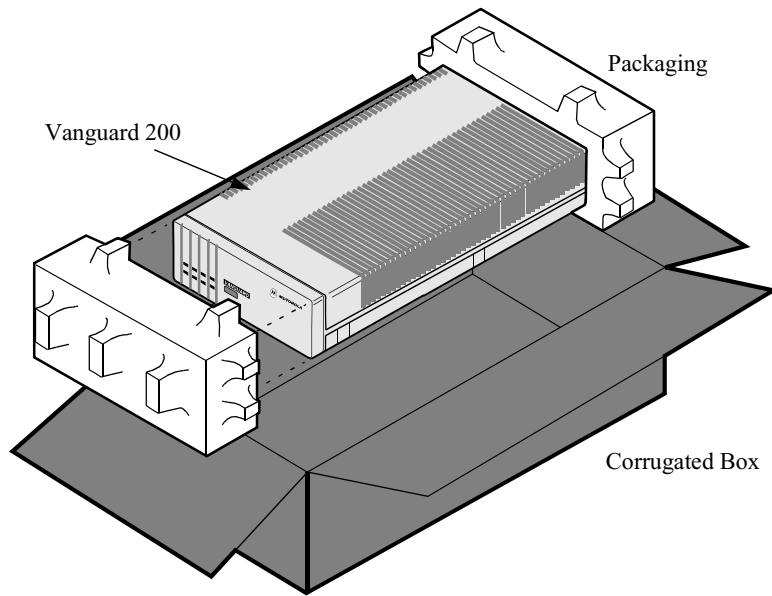


Figure 2-1. Unpacking the Vanguard 200

List of Contents

Inside your shipping carton, you should find the contents shown in Figure 2-2.

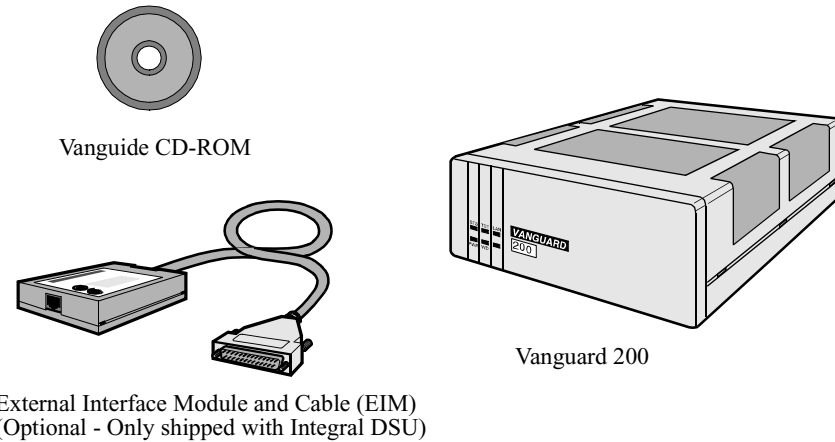


Figure 2-2. Vanguard 200 Shipment Content

In Case of Damage or Missing Parts

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 customer service representative:

<i>For locations</i>	<i>contact...</i>
Inside the United States	Vanguard Managed Solutions, LLC 575 West Street Mansfield, MA 02048-1193 Phone (508) 261-4000, Ext. 4745
Outside the United States	the nearest distributor

Choosing a Site

Introduction

This section describes how to choose a site for the Vanguard 200.

Choosing 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.



Caution

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.



Mise en Garde

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.



Vorsicht

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 200 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.



Caution

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.

Mise en Garde

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.

Caution

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.

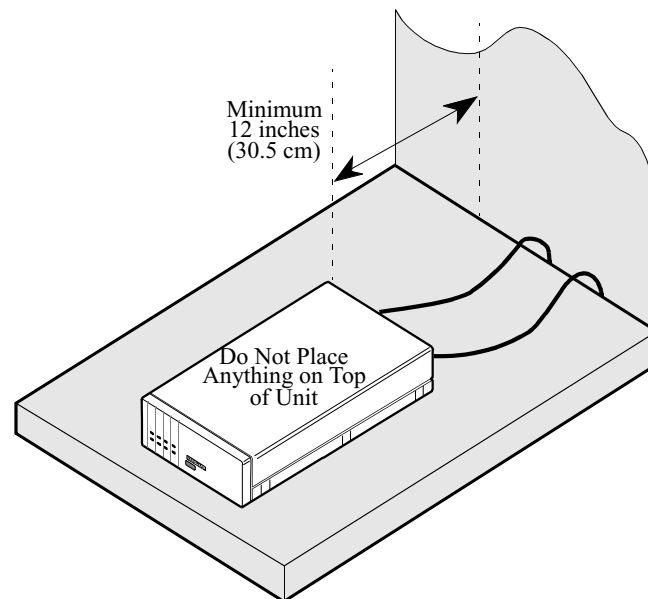


Figure 2-3. Proper Cable and Air Clearance

Warnings And Cautions

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

Caution

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.

Mise en Garde

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.



Vorsicht

Die in diesem Handbuch aufgeführten Vorgänge sollten ausschließlich von geschulten und qualifizierten Technikern durchgeführt werden. Da Vanguard-Zusatzkarten und DIMs von 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.



Warning

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.



Warning

Anschlüsse, die mit anderen Geräten verbindet werden können, sind als SELV beschrieben. Um Konformität mit EN 60950 zu versichern, sichern Sie es, daß diese Anschlüsse nur mit den des selben Type auf anderen Geräten verbindet werden.

Cabling the Vanguard 200

Introduction

After unpacking the Vanguard 200, complete the installation by connecting cables to the Vanguard 200.

Vanguard 200 Rear Panel

Figure 2-4 illustrates the rear panel of the Vanguard 200.

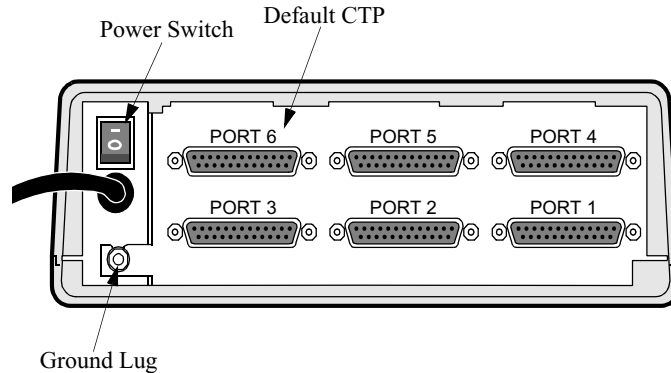


Figure 2-4. Vanguard 200 Rear View

Serial/Network Ports

Vanguard 200 supports six ports, which can be configured for serial links or terminal devices. Up to six ports can be configured as network ports to interface the frame relay or X.25 network.

The common applications are to connect five serial devices to the network using one network link or four serial devices with two network links, one of which could be used for link failure recovery.

Ports have the following connector, interface, and speed characteristics.

Port Characteristics

Port	Connector	Interface	Default	Speed	DTE/DCE
1	DB25	DIM	Frame Relay	V.24: <ul style="list-style-type: none"> • 80 kbps (sync) • 38.4 kbps (async) V.35, V.11, or V.36: <ul style="list-style-type: none"> • 384 kbps int. clocks • 1.54 Mbps ext. clocks DSU: <ul style="list-style-type: none"> • 56 kbps (sync) 	DTE/DCE DTE/DCE DTE only

Port Characteristics (*continued*)

Port	Connector	Interface	Default	Speed	DTE/ DCE
2	DB25	DIM	Frame Relay	V.24: <ul style="list-style-type: none"> • 80 kbps (sync) • 38.4 kbps (async) V.35, V.11, or V.36: <ul style="list-style-type: none"> • 384 kbps int. clocks • 1.54 Mbps ext. clocks DSU: <ul style="list-style-type: none"> • 56 kbps (sync) 	DTE/ DCE DTE/ DCE DTE only
3	DB25	V.24	Async	80 kbps	DCE
4	DB25	V.24	Async	80 kbps	DCE
5	DB25	V.24	Async	80 kbps	DCE
6	DB25	V.24	Async	80 kbps	DCE

Installing and Cabling the DSU Interface

Introduction

This section describes how to install and cable the DSU interface.



Caution

Always power down and disconnect the Vanguard 200 before you attempt to install the DSU interface.

DSU DIM Installation

The DSU DIM is an optional device and is either pre-installed in the factory or may be installed on site. Refer to the *Vanguard Daughtercard Installation Guide* (T0020) for complete DIM installation instruction.

■ Note

The DSU interface is configured in Port 1 when pre-installed and shipped from the factory.

DSU Interface Cables

The Vanguard 200 with integral DSU is shipped with two communications cables:

- The EIM with 18-inch cable assembly
- A leased line audio cable (15 ft)

The EIM has an 18 in. cable with a 25-pin connection for interface with the Vanguard 200 and an RJ-48S connector for connection to the DDS line. The EIM, shown in Figure 2-5, provides the telco interface circuitry.

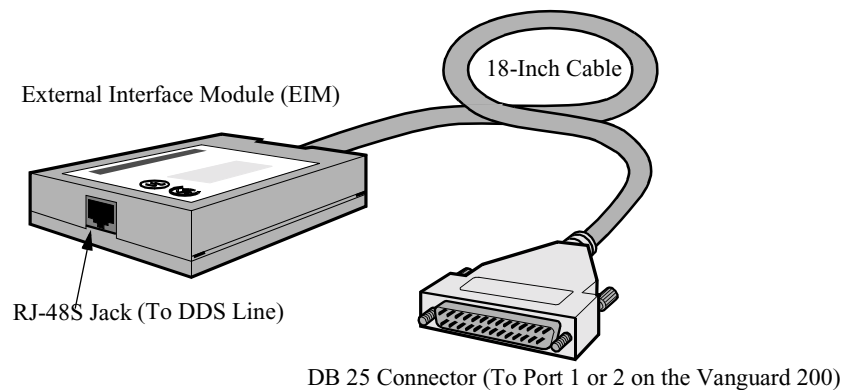


Figure 2-5. External Interface Module (EIM) Cable Assembly

Connecting the EIM The table below outlines the procedure for connecting the EIM to the Vanguard 200 and DDS line:

Step	Action
1	Determine which port has a DSU DIM installed (Port 1 or Port 2).
2	Plug the EIM cable assembly's DB25 connector into the Vanguard 200 port connector that corresponds to the DSU DIM (Port 1 or Port 2).
3	Tighten the connector mounting screws to provide proper grounding and ensure signal integrity.
4	Attach one end of the leased line audio cable to the RJ48S connector on the Vanguard 200.
5	Attach the other end of the leased line audio cable to a telco plug.

Always connect the EIM to the Vanguard 200 before connecting the leased line cable to the EIM. Disconnect the telco plug before disconnecting the EIM with the leased line audio cable from the Vanguard 200.

Front Panel DIP Switch Definitions

Vanguard 200 DIP Switch

The DIP switches on the front panel are defined in Figure 2-6 and the table below:

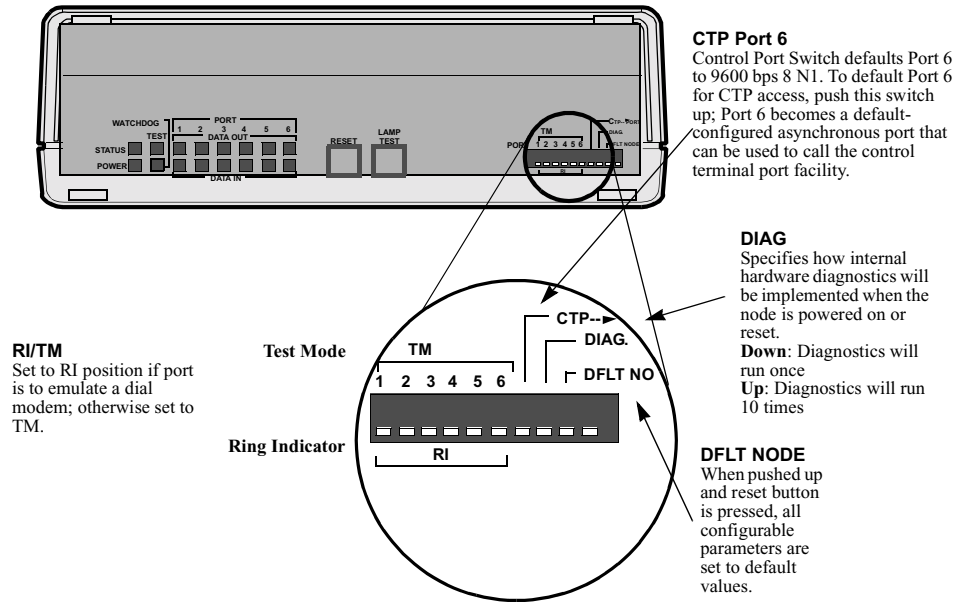


Figure 2-6. Front Panel Dip Switch

Switch Position	Switch Name	Up	Down
1	Port 1 TM/RI	Pin 22 is input on Port 1 (TM).	Pin 22 is output on Port 1 (RI).
2	Port 2 TM/RI	Pin 22 is input on Port 2 (TM).	Pin 22 is output on Port 2 (RI).
3	Port 3 TM/RI	Pin 22 is input on Port 3 (TM).	Pin 22 is output on Port 3 (RI).
4	Port 4 TM/RI	Pin 22 is input on Port 4 (TM).	Pin 22 is output on Port 4 (RI).
5	Port 5 TM/RI	Pin 22 is input on Port 5 (TM).	Pin 22 is output on Port 5 (RI).
6	Port 6 TM/RI	Pin 22 is input on Port 6 (TM).	Pin 22 is output on Port 6 (RI).
7	Port 6 CTP	Configures Port 6 as PAD port.	Normal operation.
8	DIAGNOSTICS	Runs diagnostics 10 times.	Normal operation.

Front Panel DIP Switch Definitions

Switch Position	Switch Name	Up	Down (continued)
9	DEFAULT NODE	Resets all configurable parameters to default values.	Normal operation.
10	Not used	N/A	N/A

Chapter 3

Powering On the Vanguard 200

Overview

Introduction

This chapter describes

- powering up the Vanguard 200
 - interpreting LED display for power up diagnostics
 - accessing the CTP
-

Powering On the Vanguard 200

Introduction

This section describes the sequence of events when you power up the Vanguard 200.

Powering On the Vanguard 200

The Vanguard 200 does not have a power switch on the unit. Follow these steps to power on the Vanguard 200:

Step	Action
1	Connect the power cord to the power supply outlet.
2	Turn on the power switch located on the rear panel of the unit.

Powerup Diagnostics

Introduction

This section describes diagnostics that run when Vanguard 200 is powered up.

Front Panel LEDs

Figure 3-1 shows the front panel LEDs on the Vanguard 200. These LEDs help you isolate a problem.

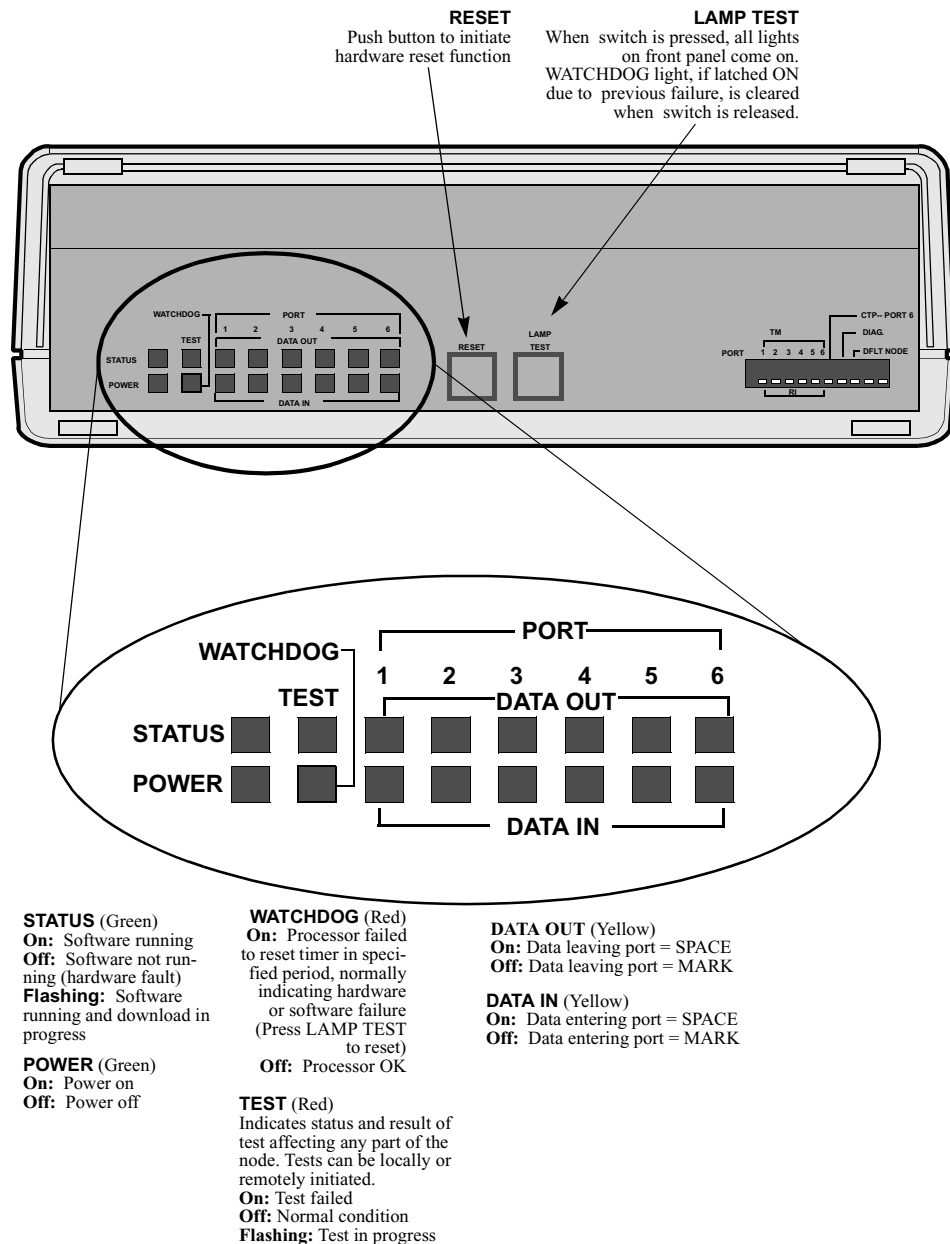


Figure 3-1. Vanguard 200 Front Panel LEDs

Power Sequence

When the Vanguard 200 power switch is turned ON, you will see the following powerup sequence:

Stage	<i>when...</i>	<i>...this indicates</i>
1	The green POWER LED turns on.	the node is receiving power.
2	For approximately 20 seconds, only the green POWER LED is on.	the system software is being loaded into DRAM from FLASH.
3	The red TEST LED blinks for approximately 25 seconds.	the hardware is being tested.
4	All LEDs (except for the green POWER LED) go off for approximately 8 seconds.	the system software is reading the configuration from configuration memory and is initializing the node.
5	The green STATUS LED comes on and remains on.	the node is operational and ready to begin passing data.

Accessing the Control Terminal Port

Introduction

Once you have powered on the Vanguard 200, 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 Configuration Basics Manual* (Part Number T0113).

Procedure

Follow these steps to access the Vanguard 200 CTP Main menu:

■ **Note**

This procedure assumes that a PC or terminal is connected to Port 6 of the Vanguard 200 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	Type <CR> until either an asterisk (*) or the OK prompt appears.
3	When you see OK, type atds0 . When you see the asterisk (*) type .ctp . The CTP banner will appear. If this banner does not appear, verify that these steps have been followed correctly.
4	Type <CR> 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 <CR>** after the Vanguard 200 outputs the OK prompt.

CTP Access Via Remote X.25 or Frame Relay Network

If the Vanguard 200 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.

Resetting Default CTP Configuration

Introduction

In addition to being used as a CTP port, Port 6 can also be configured as an access port. Consequently, you must default Port 6 to gain local CTP access to the Vanguard 200.

Default of the CTP refers to parameters used to configure the port; the configuration record corresponding to the port remains unchanged.

If the CTP Port 6 switch is set in the up position, the configuration of the CTP (Port 6) defaults to 9600 baud, 8 bit characters, 1 stop bit, no parity.

Procedure

This table outlines the procedure for defaulting the CTP:

Step	Action
1	Push switch position 7 up to default Port 6 to a PAD port.
2	Power cycle or reset.
3	Set the CTP terminal to 9600 baud, 8 bit characters, 1 stop bit, no parity
4	Log in as previously described.
5	Configure Port 6 as desired.
6	Reboot to verify the configuration in configuration memory is operating.

Chapter 4

Vanguard 200 Software

Overview

Introduction

This chapter provides information on software for the Vanguard 200.

Operating Software

Operating software is compressed in FLASH memory and loaded into DRAM for operation. See the *Software Release Notice* accompanying your Vanguard unit for more information on the software available for the Vanguard 200.

Where to Get Operating Software

You can obtain operating software images for your Vanguard 200 from:

- 1) the Vanguide CD-ROM
- 2) the Internet, using the following URL:
<http://www.vanguardms.com>

Installation Method

Install software to the Vanguard 200 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 Set - Refer to the Vanguide Set documentation for complete installation and downloading procedures.

■ Note

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

<http://www.vanguardms.com/documentation>

Chapter 5

Configuring the Vanguard 200 for DSU Operation

Overview

Introduction

This chapter describes how to use the CTP to configure and monitor DSU operation on the Vanguard 200.

DSU Configuration

Procedure

You use the CTP to configure the DSU. Follow these steps to configure the Vanguard 200 for DSU operation:

Step	Action
1	Refer to the <i>Vanguard Configuration Basics Manual</i> for more information on configuring a port. However, you do not need to complete these configuration parameters: <ul style="list-style-type: none">• Clock Speed• Connection Type• Port Control
2	Configure the clock source parameter under port configuration as follows: <ul style="list-style-type: none">• INT: Provides clocking to the network.• EXT: Uses clocking from the network.

DSU Reporting

Introduction

This section contains information on:

- DSU reporting for input and output signalling
- difference in CTP statistics
- diagnostics menu for DSU loopbacks

DSU Reporting for Input Signalling

CTP reporting of information differs for the DSU in terms of input signaling. Use the Monitor menu within the CTP menu structure to view these signals.

<i>Input Signal</i>	<i>Description</i>
NIS (Not In Service)	This is normally “L”. It is used to determine if the other end of the connection is available. If no signal is received, the DSU option is in DSU loopback mode, Or: If idle codes are received, NIS is “H”.
BPV (Bipolar Violation)	An “L” means the DSU option has received a bipolar violation. An “H” is expected during normal operation. It is expected to toggle during a DSU loopback condition.
DL (DSU Loopback)	This is normally “H”. An “L” indicates entry into a DSU loopback mode.
C+ (Positive Sealing Current)	This is “H” if the DC current on the telephone company interface is not in the positive direction. ■ Note If both C+ and C- are “H”, no sealing current exists, which often occurs when connected to other DSU type hardware. C+ would be expected to be “L” normally when connected to central office equipment (OCU) hardware.
C- (Negative Sealing Current)	This is “H” if the DC current on the telephone company interface is not in the negative direction. ■ Note If both C+ and C- are “H”, no sealing current exists, which often occurs when connected to other DSU type hardware. C+ would be expected to be “L” normally when connected to central office equipment (OCU) hardware.

DSU Reporting for Output Signalling

CTP reporting of information for the DSU differs in terms of output signaling. Although these output signals are not directly accessible to the user, the DSU option software manipulates these signals and may be useful for informational purposes. Use the CTP “Monitor” function within the Main menu to view these signals.

<i>Input Signal</i>	<i>Function</i>
RS (Reset)	This resets the DSU option hardware. The normal operating state is “H”.
LL (Local Loopback)	When “L”, the DSU hardware is locally looping data back to the Vanguard hardware.
CL (CSU Loopback)	When “L”, the DSU hardware is looping the remote connection’s receive to transmit.
IDL (Idle)	An “H” informs the DSU hardware to send idle bipolar violations to the remote system.
CLK (Clock Mode)	When “H,” this denotes network clock use. When “L”, the DSU option provides the clock.

Differences In CTP Statistics

CTP statistics output also differs in the following ways:

- Detailed Port Statistics show DSU input/output signaling, as well as noting the installed DSU.
- Detailed Node Statistics show DSU installation.

DSU Loopback Options

Use the Diagnostics menu within the CTP menu structure, shown in Figure 5-1, to access the DSU Internal Loopback and DSU Internal and External Loopback options.

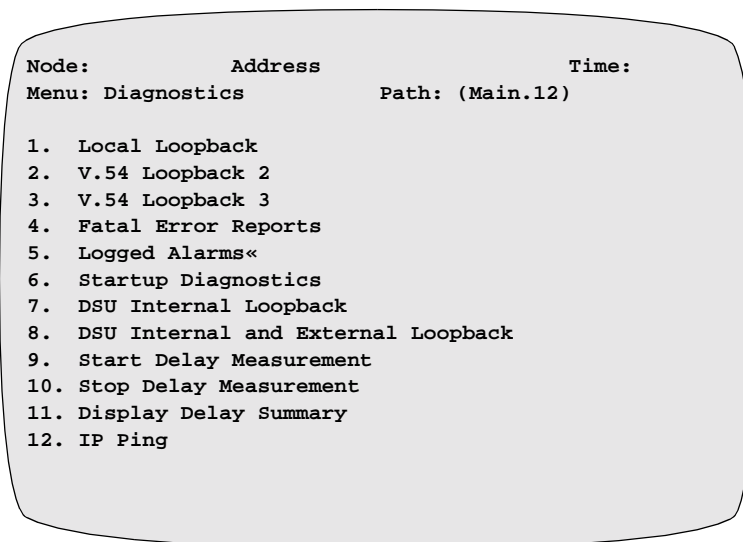


Figure 5-1. Diagnostics Menu

The following loopbacks are available through the CTP.

Mode	Function
DSU Internal Loopback	Does not affect the external interface. Loops the local transmit data back to the receive data. Failure indicates no connection.
DSU Internal and External Loopback	Performs the internal loopback by looping the external transmit to the external receive to allow manual testing of the remote interface.

Appendix A

Specifications

Introduction	This appendix describes the physical and environmental specifications, and power requirements for the Vanguard 200.
Hardware	Vanguard 200 hardware includes the following: <ul style="list-style-type: none">• 68302 processor• 2 Mbytes of FLASH• 4 Megabytes Software Download Code compressed in FLASH• 2 Megabyte PROM• 3 Megabyte DRAM (expandable to 5 Megabytes DRAM)• 32 kbyte Battery-backed Configuration Memory
Optional Hardware Components	The following optional hardware components may be installed in the Vanguard 200: <ul style="list-style-type: none">• Optional DSU DIM• Optional V.24, V.35, V.11, or V.36 DIM
Serial Ports	Vanguard 200 is available with six serial ports. Up to six ports may be configured as network ports.
Motherboard	The motherboard supports up to six interfaces. Two interfaces can support speeds to 1.54 Mbps (with appropriate DIM module); the other interfaces support synchronous speeds to 80 kbps each. Maximum asynchronous speed is 38.4 kbps.
DSU Specifications	The DSU adheres to the following specifications: <ul style="list-style-type: none">• Conforms to AT&T 62310 and ANSI T1/E1.4/91-006 56 kbps• Internal/external clocking
Environmental	Vanguard 200 adheres to the following: <ul style="list-style-type: none">• Operating temperature: 32° to 122° F maximum (0° to 50°C)• Storage temperature: -40° to 158°F (-40° to +70°C)• Relative humidity: 5% to 95% (noncondensing)
Electromagnetic Compatibility	Vanguard 200 adheres to the following: <ul style="list-style-type: none">• FCC Part 15, Class B• CISPR 22 and EN 55022, Class B• EN 50082-1

Safety

Vanguard 200 adheres to the following:

- EN60950
 - CSA 950
 - UL Listed per UL 1950
-

Power Requirements

Vanguard 200 requires the following power:

- 90 to 264VAC/ at 47 to 63 Hz
 - 37 Watts
-

Physical

Vanguard 200 adheres to the following measurements:

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

**Configuration
Memory Battery
Shelf Life**

Vanguard 200's configuration memory battery shelf life is 10 years.

Weight

Weight for the Vanguard 200 is as follows:

- Vanguard 200 base unit: 5.5 lbs (2.5 kg)
 - DSU Option: 0.25 lbs (0.2 kg)
-

Appendix B

Troubleshooting Your Vanguard 200

In This Appendix

Introduction

This appendix describes troubleshooting tips and actions you can take to correct problems you may encounter with your Vanguard 200.

While Powering Up the Vanguard 200

Hardware Failure If the TEST lights turns on and remains on, one or more of the diagnostic tests have failed, indicating there is a hardware problem. Contact Customer Support/Service for possible repairs to your Vanguard 200.

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.

While Coldloading a New Software Image

Troubleshooting

This table lists some of the potential problems you may encounter during the coldload procedure:

<i>Problem</i>	<i>Cause</i>	<i>What to do...</i>
At the end of the loading, the node outputs the message “VG200 waiting coldload.”	This is because a wrong or corrupted image has been loaded into the node and is being ignored by the Vanguard 200.	Check to ensure that the image you are downloading is intended for the platform.

DSU Troubleshooting

Introduction

Use the following information to aid in troubleshooting potential installation problems.

Potential Installation Problems

Installation problems may include the following:

- Improper telephone company interface connection
- Incorrect DSU port Clock Source option
- No signal from telephone company interface

The following information may be derived from the CTP.

<i>Function</i>	<i>used to...</i>
Node Statistics	<ul style="list-style-type: none">• verify that the software version contains the DSU option modifications.• show if the software recognizes the DSU.
Port Statistics	<ul style="list-style-type: none">• verify that data is sent without error; error counts may denote an error in clocking mode configuration (before checking the port for errors, reset the port statistics for the DSU).• show if the software recognizes the DSU.
Monitor	<ul style="list-style-type: none">• determine, via input/output signals, if the DSU option is in a loopback mode requested by the remote end (which would result in an inability to send data); continuous bipolar violations indicate the remote system is out of service.
DSU Internal Loopback	<ul style="list-style-type: none">• indicate a failure of this loopback mode, meaning an EIM connection has not been made.

Appendix C

Software License and Regulatory Information

In This Appendix

Introduction

This appendix contains the software licence statement and regulatory declarations for the Vanguard 200.

Software License Terms And Conditions

Software License Terms And Conditions

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Product Declarations and Regulatory Information

Introduction

The following sections provide information about standards compliance and safety statements.

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 and EN 55022. 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 following information includes the Industry Canada statement:

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 réseaux de télécommunications, comme le prescrivent les documents concernant les exigences technique relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

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

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avertissement: l'utilisateur ne doit pas tenter de faire ces raccordements lui-même, il doit avoir recours à un service 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.

EEC Conformity Declaration

The Vanguard 200 Digital Terminating Equipment now conforms with:

- 1) The type as described in EC Type-Examination certificate Number BABT/95/2487
- 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.

Statement of Conformity

One of the marks in Figure C-1 appears on each of the Vanguard products that are CE compliant, and the statement that follows explains its significance.

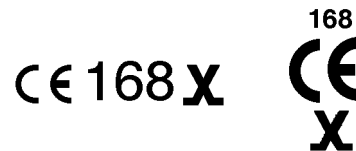


Figure C-1. CE Compliance Mark

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

- 73/23/EEC Low Voltage Directive (Safety)
- 91/263/EEC Terminal Directive
- 89/336/EEC EMC Directive

The number 168 in the CE mark indicates the Notified Body granting the approval under 91/263/EEC (BABT). The approval number is AA601576.

NOTE: Compliance with the above directives may only be assured when the equipment is installed and operated in accordance with the instructions for use and for the purpose for which it is intended.

FCC Part 68 and Telephone Company Procedures and Requirements for Integral DSU

Introduction

Before the Vanguard 200 can be connected to the network in the United States, you must:

- Provide the local telephone company with the equipment's registration number
- Order the proper connections

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-kbps digital interface	RJ48S	6.0F	04DU5-56

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.

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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 Solutions 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.

<i>For Locations</i>	<i>Contact...</i>
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.

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