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# Vanguard Daughtercard Installation Guide

# Notice

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## Notice (continued)

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### Radio Frequency Interference Regulations

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

You can obtain the proper cables from VanguardMS. Notice (continued)

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



**Chapter 1.**

**General Information on Vanguard Daughtercards**

Standard Packaging ..... 4

**Chapter 2.**

**Daughtercard Installation**

Vanguard 340E/342 Daughtercard Installation ..... 2  
    Accessing the Motherboard in a Vanguard 340E/342 ..... 2  
    Installing the Daughtercard Vanguard 340E/342..... 2  
Vanguard 6435/6455 Series Daughtercard Installation ..... 6  
    Accessing the Motherboard in a Vanguard 6435/6455 ..... 6  
    Installing the Daughtercard in a Vanguard 6435/6455 ..... 7  
Vanguard 6840/6841 Series Daughtercard Installation ..... 10  
    Accessing the Motherboard in a Vanguard 6840/6841 ..... 10  
    Installing the Daughtercard in a Vanguard 6840/6841 ..... 11

**Chapter 3.**

**DSU Daughtercard**

**Chapter 4.**

**DIM Daughtercard Installation**

Strapping the DIM Daughtercard ..... 2  
Setting the Switches on the DIM Daughtercard ..... 3  
Installing a DIM on a DIM Daughtercard ..... 4  
DIM Installation ..... 5

**Chapter 5.**

**ISDN Daughtercards**

ISDN Cables ..... 4  
Setting S/T and Voice ISDN Termination Resistance ..... 6  
European Approval Labels ..... 8

**Chapter 6.**

**FXO/FXS Voice Daughtercards**

FXS/FXO Daughtercard ..... 1  
Dual FXS Daughtercard..... 2  
4-Port FXS and FXO Daughtercards ..... 3

## Contents (continued)

---

### Chapter 7.

---

#### Dual E&M Daughtercard

|                                |   |
|--------------------------------|---|
| Dual E&M Jumper Settings ..... | 2 |
| Cable Pinout .....             | 3 |

### Chapter 8.

---

#### RemoteVU Daughtercard

|                                   |   |
|-----------------------------------|---|
| RemoteVUTM Cable Connectors ..... | 1 |
|-----------------------------------|---|

### Chapter 9.

---

#### FT1/FE1 Daughtercard

|                                 |   |
|---------------------------------|---|
| FE1 Daughtercard Settings ..... | 2 |
|---------------------------------|---|

### Chapter 10.

---

#### V.34 Daughtercard

### Chapter 11.

---

#### V.90 Daughtercard

### Chapter 12.

---

#### 2-Port Serial Daughtercard

### Chapter 13.

---

#### SIMM/DIMM Installation

|   |   |
|---|---|
| SIMM and DIMM Compatibility and Locations .....                         | 2 |
| Vanguard 340E/342 SIMM Installation and Removal .....                   | 2 |
| Vanguard 64xx Series FLASH, Data Compression, and Data Encryption SIMMs | 5 |
| Vanguard 68xx Series SDRAM DIMM .....                                   | 7 |

# Chapter 1

## General Information on Vanguard Daughtercards

### Overview

#### Introduction

This chapter provides general information on Vanguard Networks Daughtercards.

#### Description

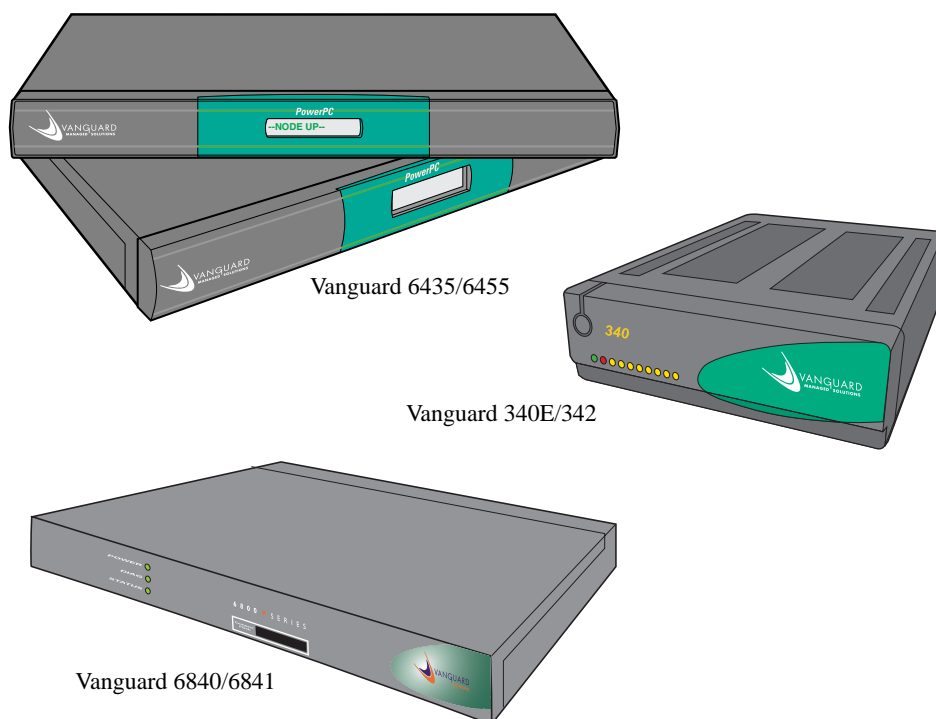
The daughtercards described in this manual can in be installed in the following Vanguard Networks devices:

- Vanguard 340E/342
- Vanguard 6435/6455
- Vanguard 6840/6841

Figure 1-1 shows the current Vanguard devices.

#### ■ Note

The Vanguard Networks models 100, 305, 320, 340, and 6425/6430/6450 have been sunset and are not covered in this manual.



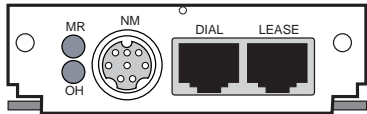
**Figure 1-1. The Current Vanguard Networks Devices**

## **Vanguard Daughtercards**

The chapters following Chapter 1 (General Information) and Chapter 2 (Installation), each describe a different daughtercard type, the table below lists the daughtercard type and the applicable chapter.

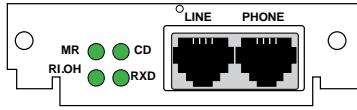
| <b><i>Daughtercard</i></b>  | <b><i>Chapter</i></b> |
|-----------------------------|-----------------------|
| DSU Daughtercard            | Chapter 3             |
| DIM Daughtercard            | Chapter 4             |
| ISDN Daughtercards          | Chapter 5             |
| FXO/FXS Voice Daughtercards | Chapter 6             |
| Dual E&M Daughtercard       | Chapter 7             |
| RemoteVU Daughtercard       | Chapter 8             |
| FT1/FE1 Daughtercards       | Chapter 9             |
| V.34 Daughtercard           | Chapter 10            |
| V.90 Daughtercard           | Chapter 11            |
| 2-Port Serial Daughtercard  | Chapter 12            |
| SIMM/DIMM Installation      | Chapter 13            |

Figure 1-2 illustrates the current set of Vanguard Networks daughtercards and their the applicable Vanguard Networks devices.



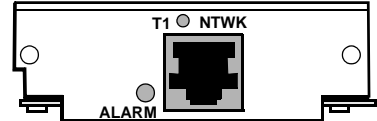
**V.34 Daughtercard**

- 6435/6455



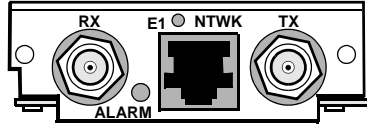
**V.90 Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



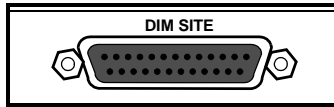
**FT1 Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



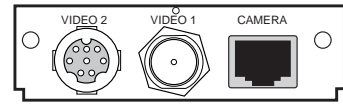
**FE1 Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



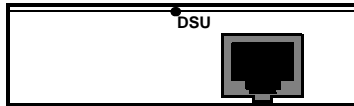
**DIM Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



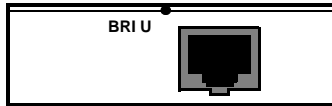
**RemoteVU Daughtercard**

- 6435/6455



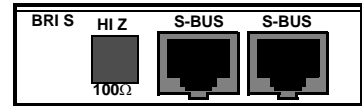
**DSU Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



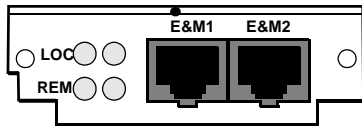
**BRI ISDN U Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



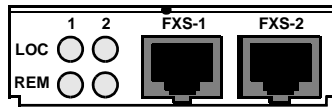
**BRI ISDN S/T Daughtercard**

- 340E/342
- 6435/6455



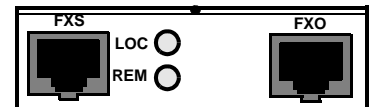
**Dual E&M Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



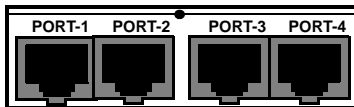
**Dual FXS Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



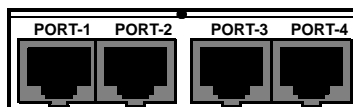
**FXO/FXS Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



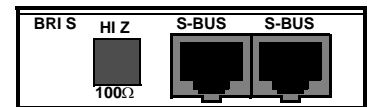
**4-Port FXO Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



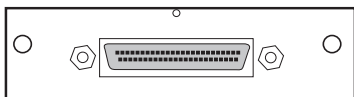
**4-Port FXS Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



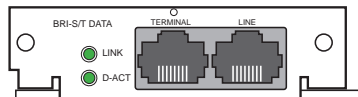
**ISDN BRI S/T Voice Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



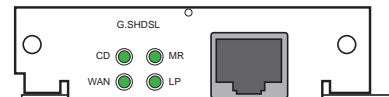
**2-Port Serial Daughtercard**

- 6840/6841



**Enhanced ISDN BRI S/T Daughtercard**

- 340E/342
- 6435/6455
- 6840/6841



**G.SHDSL Daughtercard**

- 340E/342
- 6435/6455

**Figure 1-2. Vanguard Networks Daughtercards and Applicable Devices**

## Standard Packaging

### Introduction

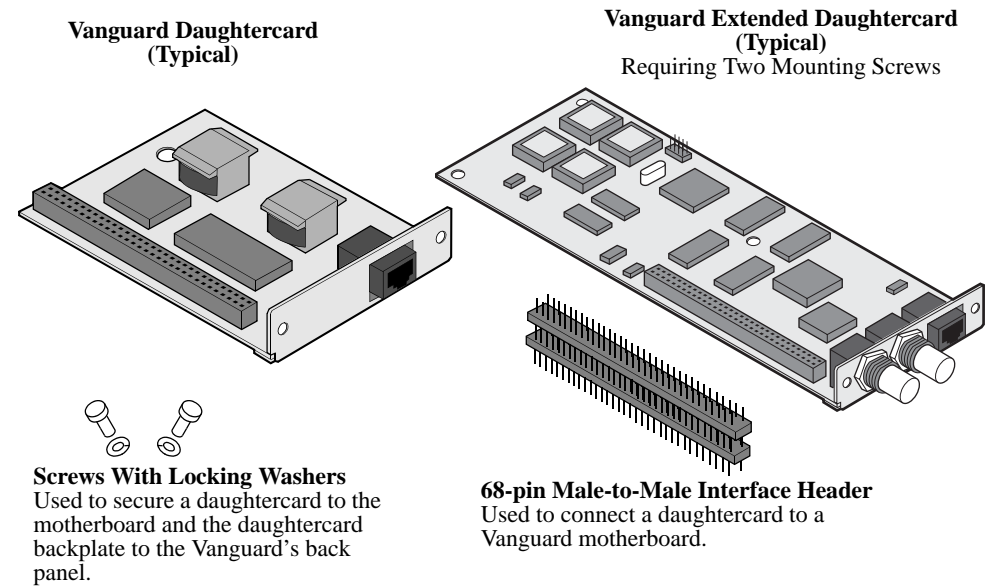
This section describes the shipping contents of a typical Daughtercard Installation Kit.

### Description

All Vanguard Networks daughtercards are shipped with the standard components shown in Figure 1-3. Additional components specific to particular daughtercards are listed in their respective chapters.

■ **Note**

All Vanguard products are manufactured with daughtercard standoffs installed on the motherboard.



**Figure 1-3. Typical Daughtercard Installation Kit**

# Chapter 2

## Daughtercard Installation

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### Overview

---

#### Introduction

This chapter describes the how to install a Vanguard Networks Daughtercard into Vanguard Networks devices.

---

#### Description

The current line of Vanguard Networks Daughtercards can be installed into three hardware platforms. They are:

- Vanguard 340E/342
- Vanguard 6435/6455
- Vanguard 6840/6841



#### Caution

For Australian applications, only qualified installation personnel should install daughtercards.

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## Vanguard 340E/342 Daughtercard Installation

---

**Introduction** This following sections describe how to install a daughtercard into a Vanguard 340E/342.

---

**Before You Begin** To install daughtercards in the Vanguard 340, you must first remove the motherboard from the enclosure as described below.

---

### Accessing the Motherboard in a Vanguard 340E/342

---

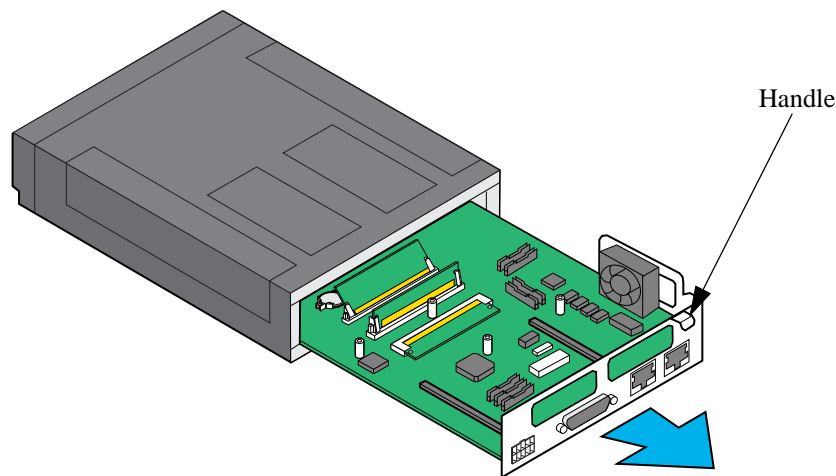
**Introduction** This section explains how access the motherboard in a Vanguard 340E/342 to install a daughtercard.

---

**Before You Begin** Power down and disconnect your Vanguard unit from its power source before removing the top cover and front panel, or handling any components.

---

**Opening the Enclosure** The Vanguard 340E/342 provides a removable tray configuration that houses the motherboard to which the daughtercards are mounted. The tray slides out from the rear of the unit. (See Figure 2-4). The Vanguard 340E/342 Series can support up to two daughtercards.



**Figure 2-4. Vanguard 340E/342 Motherboard Removal and Replacement**

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### Installing the Daughtercard Vanguard 340E/342

---

**Installing Single Daughtercards** When installing a single daughtercard in a Vanguard 340E/342, use Port 1 as shown in Figure 2-5.

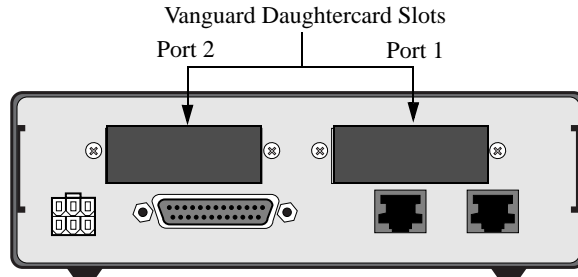


Figure 2-5. Vanguard 340E/342 Series Rear Panel Port Numbers

**Vanguard 340E/342 Daughtercards**

The Vanguard 340E/342 supports daughtercards that have a back plate that is slightly shorter than normal Vanguard daughtercards. These daughtercards can be identified by a small dimple (Figure 2-6) in the top center of the back plate. Vanguard 340E/342 daughtercards are compatible with all Vanguard products that support daughtercards. Standard Vanguard daughtercards may not fit into other Vanguard products.

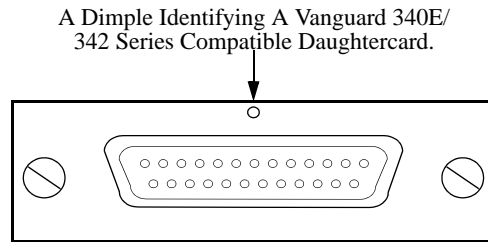


Figure 2-6. Typical Vanguard 340E/342 Daughtercard

**Daughtercard Installation Procedure**

Refer to Figure 2-7, and follow this procedure to install a daughtercard in a Vanguard 340E/342:

| Step | Action   |
|------|--|
| 1    | Power down the unit and remove the cables and power cord.  |
| 2    | Remove the motherboard as described above.   |
| 3    | Use the handle on the right side of the rear panel to carefully slide out the motherboard.<br><br><b>⚠ Caution</b><br>Exercise extreme care, when sliding the motherboard out, to prevent components mounted to the underside of the board from being knocked off. |
| 4    | Place the motherboard on a clean flat surface.   |

**Vanguard 340E/342 Daughtercard Installation**

| <b>Step</b> | <b>Action (continued)</b>  |   |
|-------------|--|---|
| <b>5</b>    | <b><i>If you are...</i></b>  | <b><i>Then...</i></b>   |
|             | Adding a daughtercard  | Connect the 68-pin interface header onto the motherboard.<br>Install this daughtercard in daughtercard slots for Port 1.  |
|             | Replacing a daughtercard   | <ul style="list-style-type: none"> <li>a) Remove the daughtercard mounting screw that attaches the daughtercard to the board.</li> <li>b) Unscrew the two rear panel coverplate screws. Unplug the existing daughtercard. If no daughtercard is installed, remove the metal blanking plate.</li> <li>c) Align the standoff on the motherboard with the hole on the new daughtercard.</li> </ul> |
| <b>6</b>    | Push the daughtercard down into the connector being careful to align the pins.<br>Do not apply excessive pressure when pushing the daughtercard into the connector or you may damage the card. |   |
| <b>7</b>    | Fasten the screw that attaches the daughtercard to the motherboard, then fasten the two rear panel coverplate screws. Daughtercard replacement/addition is complete.                           |   |
| <b>8</b>    | Reinstall the motherboard by reversing Steps 1 through 3.  |   |

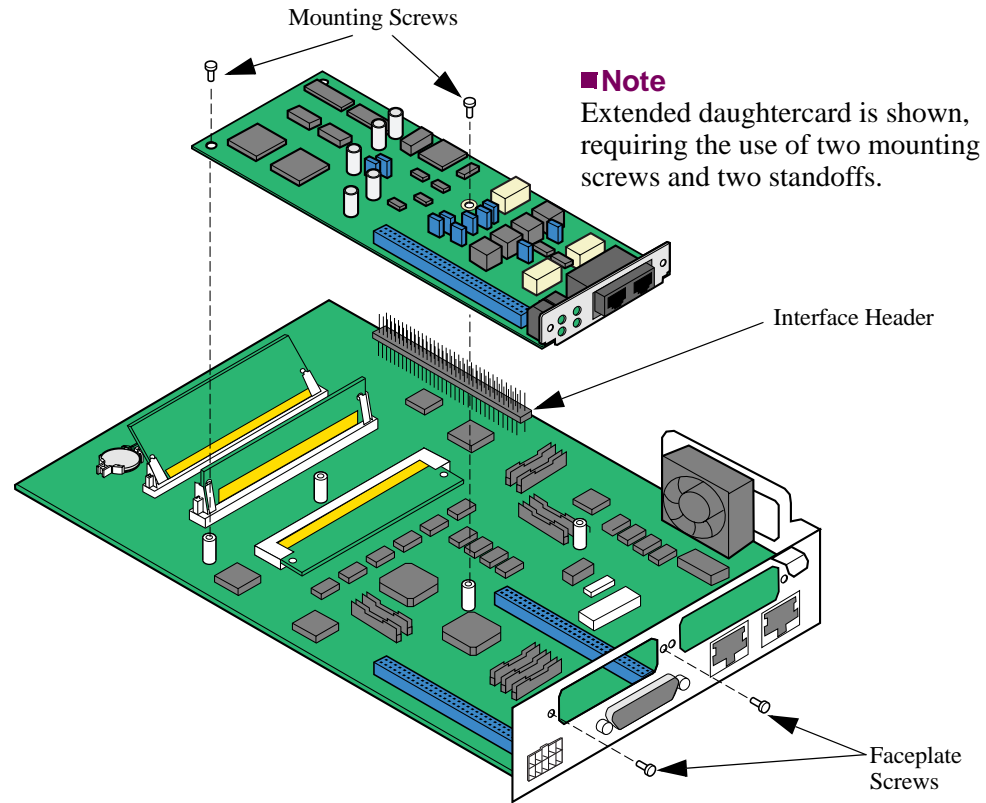


Figure 2-7. Vanguard 340E/342 Daughtercard Installation

## Vanguard 6435/6455 Series Daughtercard Installation

---

**Introduction** The following sections describe how to install a daughtercard into a Vanguard 6435/6455 Series.

---

**Before You Begin** To install daughtercards in a Vanguard 6435/6455, you must first remove the motherboard from the enclosure as described below.

---

### Accessing the Motherboard in a Vanguard 6435/6455

---

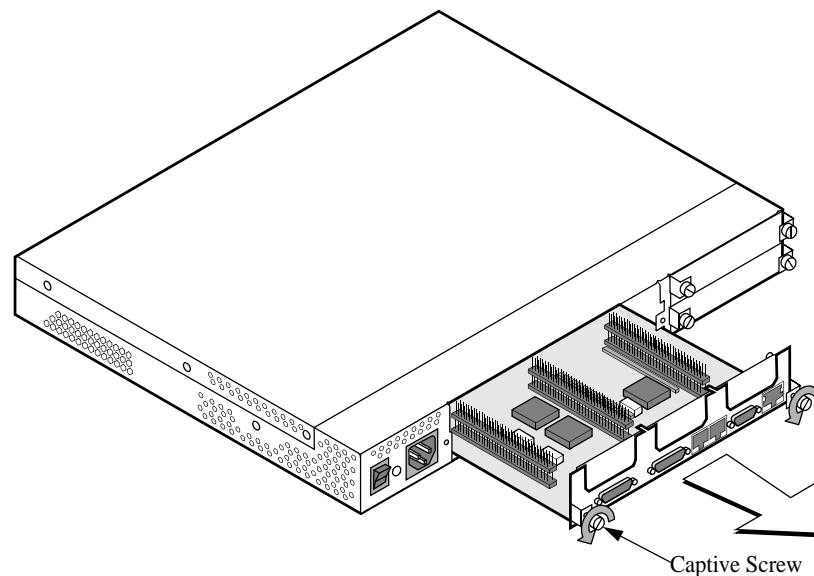
**Introduction** This section explains how to access the motherboard in a Vanguard 6435/6455 to install a daughtercard.

---

**Before You Begin** Power down and disconnect your Vanguard unit from its power source before removing the top cover and front panel, or handling any components.

---

**Opening the Enclosure** The Vanguard 6435/6455 provides removable tray configuration that houses the motherboard to which the daughtercards are mounted. The tray slides out from the rear of the unit. (See Figure 2-8). The Vanguard 6435/6455 Series can support up to three daughtercards.



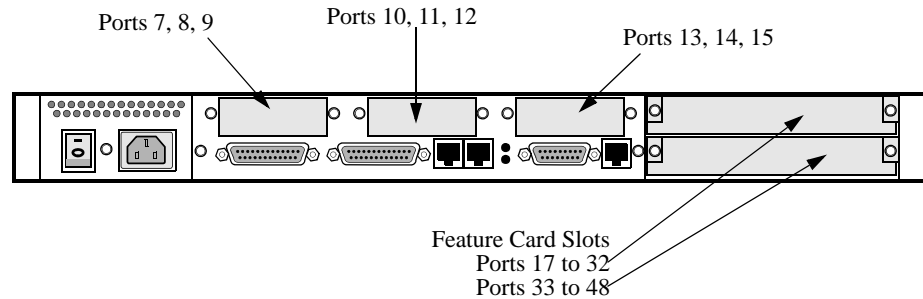
**Figure 2-8. Vanguard 6435/6455 Series Motherboard Removal and Replacement**

---

## Installing the Daughtercard in a Vanguard 6435/6455

### Installing Vanguard 6435/6455 Series Daughtercards

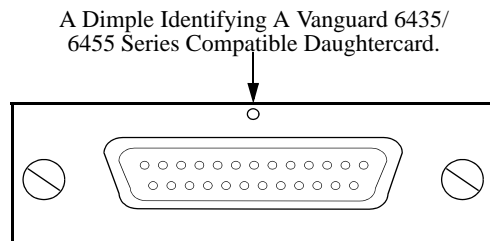
When installing a single daughtercard in a Vanguard 6435/6455, you should use the Ports 13, 14, and 15 position, as shown in Figure 2-9. If this is not practical, install oversized daughtercards (for example, the Vanguard Voice or RemoteVU Video daughtercards) in the Ports 10, 11, and 12 position. Doing this simplifies access to the DRAM, Flash, and DCC SIMM sockets.



**Figure 2-9. Vanguard 6435/6455 Series Rear Panel Port Numbers**

### Vanguard 6435/6455 Daughtercards

The Vanguard 6435/6455 supports daughtercards that have a back plate that is slightly shorter than normal Vanguard daughtercards. These daughtercards can be identified by a small dimple (Figure 2-10) in the top center of the back plate. Vanguard 6435/6455 daughtercards are compatible with all Vanguard products that support daughtercards. Standard Vanguard daughtercards may not fit into other Vanguard products.




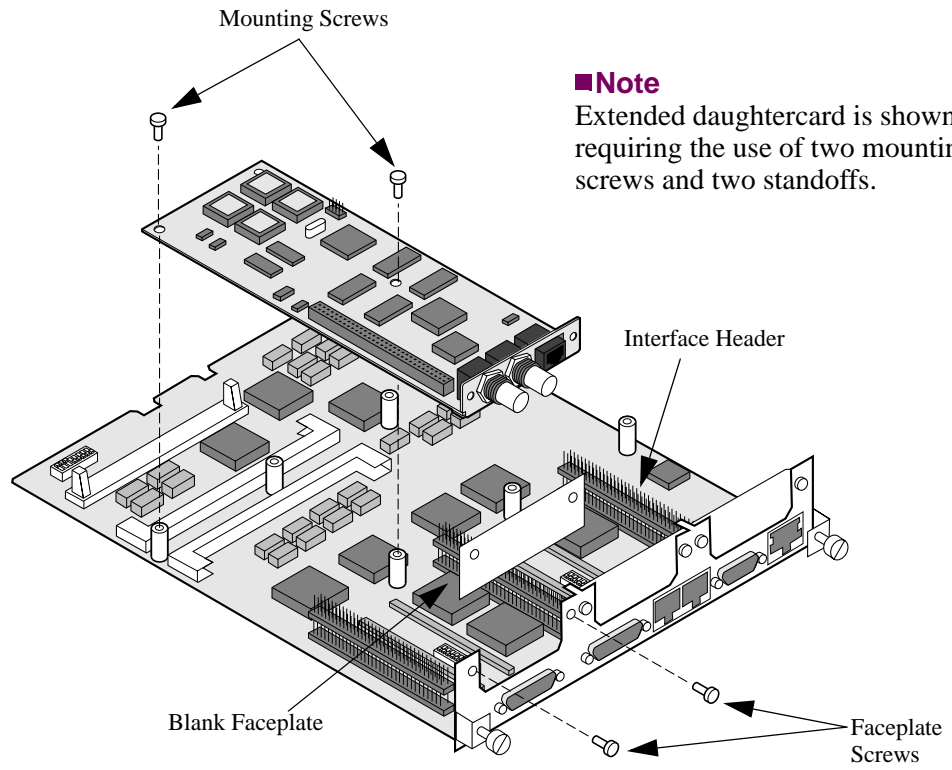
**Figure 2-10. Typical Vanguard 6435/6455 Daughtercard**

### Daughtercard Installation Procedure

Refer to Figure 2-11, and follow this procedure to install a daughtercard in a Vanguard 6435/6455:

| Step | Action  |
|------|---|
| 1    | Power down the unit and remove the cables and power cord. |
| 2    | Remove the motherboard as described above.                |

| <b>Step</b> | <b>Action (continued)</b>   |   |
|-------------|---|---|
| 3           | Use the ejector lever (below the captive screw on the left side of the motherboard) to carefully slide the motherboard out.<br><br> <b>Caution</b><br>Exercise extreme care, when sliding the motherboard out, to prevent components mounted to the underside of the board from being knocked off. |   |
| 4           | Place the motherboard on a clean flat surface.  |   |
| 5           | <b><i>If you are...</i></b>   | <b><i>Then...</i></b>   |
|             | Adding a daughtercard   | Connect the 68-pin interface header onto the motherboard.<br><br>You can install this daughtercard in any of the three daughtercard slots found in the Vanguard 6435/6455.  |
|             | Replacing a daughtercard  | a) Remove the daughtercard mounting screw that attaches the daughtercard to the board.<br><br>b) Unscrew the two rear panel coverplate screws. Unplug the existing daughtercard. If no daughtercard is installed, remove the metal blanking plate.<br><br>c) Align the standoff on the motherboard with the hole on the new daughtercard. |
| 6           | Push the daughtercard down into the connector being careful to align the pins.<br><br>Do not apply excessive pressure when pushing the daughtercard into the connector or you may damage the card.  |   |
| 7           | Fasten the screw that attaches the daughtercard to the motherboard, then fasten the two rear panel coverplate screws. Daughtercard replacement/addition is complete.  |   |
| 8           | Reinstall the motherboard by reversing Steps 1 through 3.   |   |



**Figure 2-11. Vanguard 6435/6455 Daughtercard Installation**

## Vanguard 6840/6841 Series Daughtercard Installation

---

**Introduction** The following sections describe how to install a daughtercard into a Vanguard 6840/6841 Series.

---

**Before You Begin** To install daughtercards in a Vanguard 6840/6841, you must first remove the motherboard from the enclosure as described below.

---

### Accessing the Motherboard in a Vanguard 6840/6841

---

**Introduction** This section explains how to access the motherboard in a Vanguard 6840/6841 to install a daughtercard.

---

**Before You Begin** Power down and disconnect your Vanguard unit from its power source before removing the top cover and front panel, or handling any components.

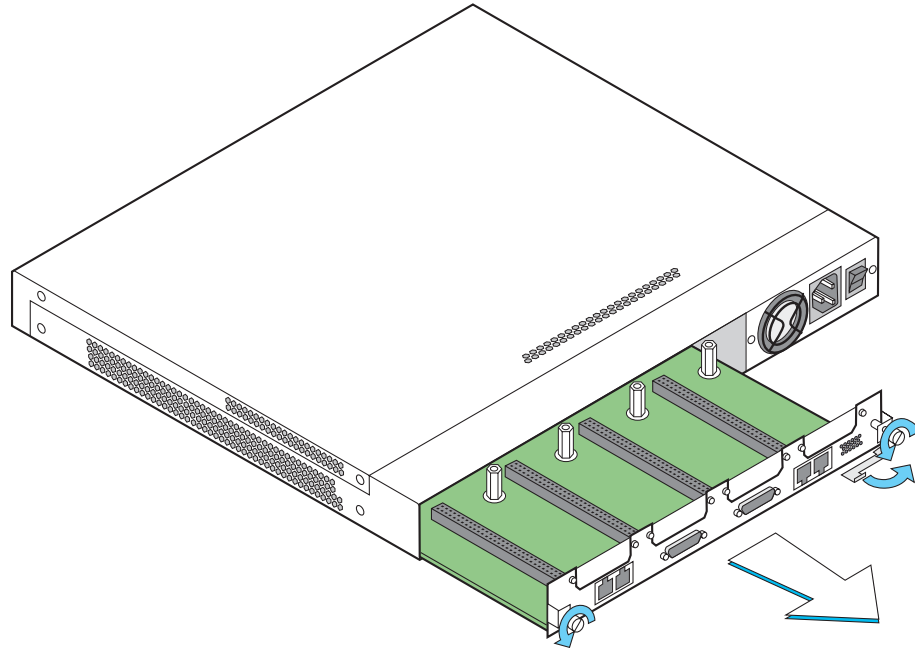
■ **Note**

The Compact Clash Memory Card will need to be removed prior to accessing the motherboard.

---

**Accessing the Motherboard** Refer to Figure 2-12, and follow this procedure to open the enclosure:

| <b>Step</b> | <b>Action</b>   |
|-------------|---|
| <b>1</b>    | Power down the unit and remove the cables and power cord.                   |
| <b>2</b>    | Remove Compact Flash Memory Card  |
| <b>3</b>    | Loosen the two captive screws on either side of the motherboard rear panel. |
| <b>4</b>    | Use the ejector lever to carefully slide out the motherboard.               |
| <b>5</b>    | Place the motherboard on a clean flat surface.                              |
| <b>6</b>    | Install daughtercard as described in Chapter 2.                             |
| <b>7</b>    | To replace the cover, reverse the steps described above.                    |

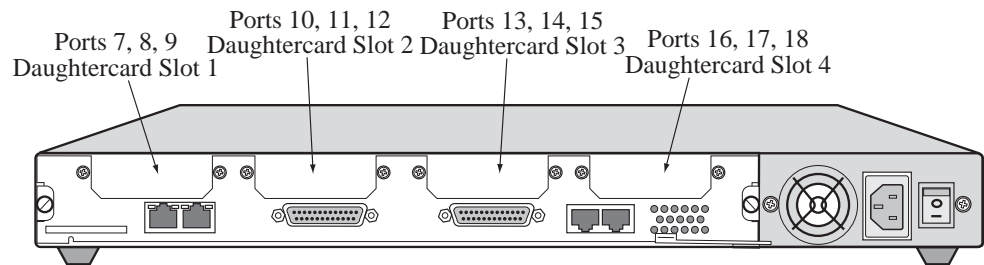


**Figure 2-12. Accessing the Vanguard 6840/6841 Motherboard**

### Installing the Daughtercard in a Vanguard 6840/6841

#### Installing Vanguard 6840/6841 Daughtercards

When installing a single daughtercard in a Vanguard 6840/6841, you should use the Ports 7, 8, and 9 position, as shown in Figure 2-13.



**Figure 2-13. Vanguard 6840/6841 Series Rear Panel Port Numbers**

#### Vanguard 6840/6841 Daughtercards

The Vanguard 6840/6841 supports daughtercards that have a back plate that is slightly shorter than normal Vanguard daughtercards. These daughtercards can be identified by a small dimple (Figure 2-10) in the top center of the back plate. Vanguard 6840/6841 daughtercards are compatible with all Vanguard products that support daughtercards. Standard Vanguard daughtercards may not fit into other Vanguard products.

A Dimple Identifying A Vanguard 6840/6841 Series Compatible Daughtercard.

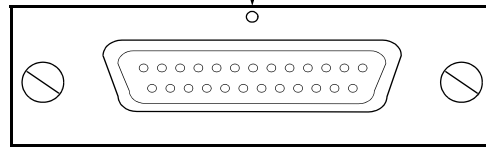


Figure 2-14. Typical Vanguard 6840/6841 Daughtercard

### Daughtercard Installation Procedure

Refer to Figure 2-11, and follow this procedure to install a daughtercard in a Vanguard 6840/6841:

| Step | Action   |  |
|------|--|--|
| 1    | Power down the unit and remove the cables and power cord.  |  |
| 2    | Remove the motherboard as described above.   |  |
| 3    | Use the ejector lever (below the captive screw on the right side of the motherboard) to carefully slide the motherboard out.   |  |
|      | <p><b>⚠ Caution</b><br/>Exercise extreme care, when sliding the motherboard out, to prevent components mounted to the underside of the board from being knocked off.</p>                       |  |
| 4    | Place the motherboard on a clean flat surface.   |  |
| 5    | <b>If you are...</b>   | <b>Then...</b>   |
|      | Adding a daughtercard  | Connect the 68-pin interface header onto the motherboard.<br>You can install this daughtercard in any of the four daughtercard slots found in the Vanguard 6840/6841.  |
|      | Replacing a daughtercard   | <p>a) Remove the daughtercard mounting screw that attaches the daughtercard to the board.</p> <p>b) Unscrew the two rear panel coverplate screws. Unplug the existing daughtercard. If no daughtercard is installed, remove the metal blanking plate.</p> <p>c) Align the standoff on the motherboard with the hole on the new daughtercard.</p> |
| 6    | Push the daughtercard down into the connector being careful to align the pins.<br>Do not apply excessive pressure when pushing the daughtercard into the connector or you may damage the card. |  |
| 7    | Fasten the screw that attaches the daughtercard to the motherboard, then fasten the two rear panel coverplate screws. Daughtercard replacement/addition is complete.                           |  |

| Step | Action (continued)  |
|------|---|
| 8    | Reinstall the motherboard by reversing Steps 1 through 3. |

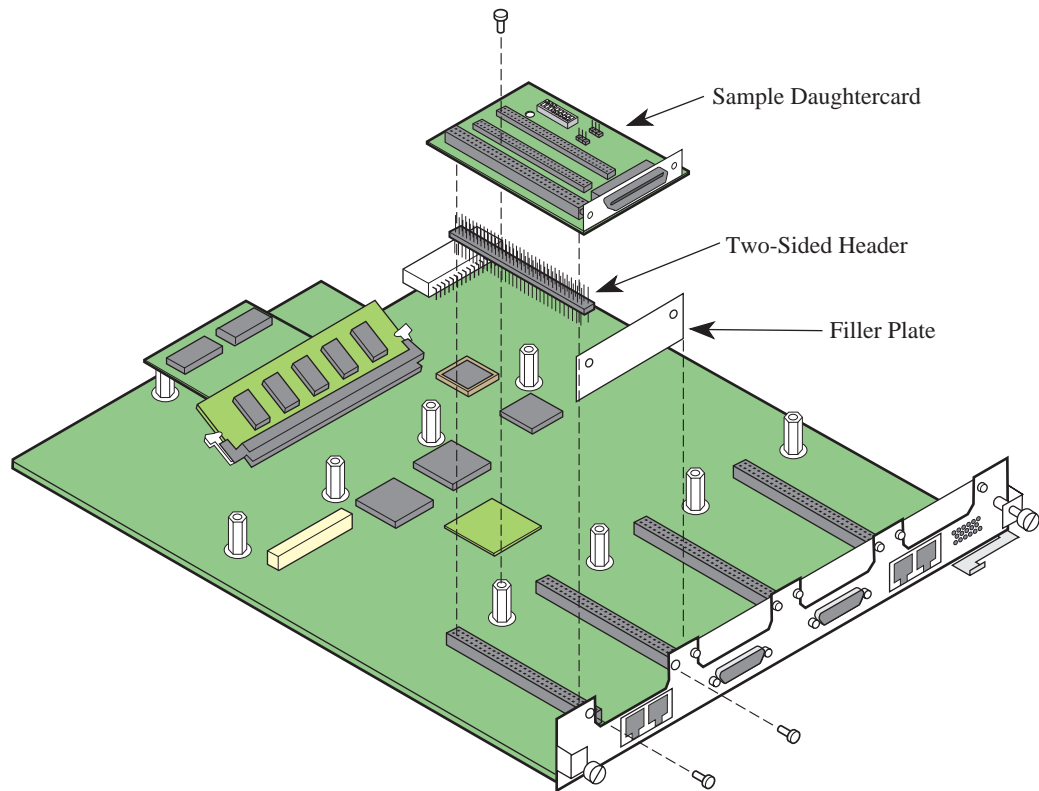


Figure 2-15. Vanguard 6840/6841 Daughtercard Installation



# Chapter 3

## DSU Daughtercard

### Overview

---

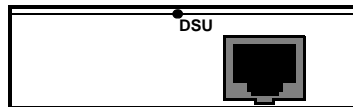
#### Introduction

This chapter describes the Vanguard Networks' DSU Daughtercard.

---

#### Description

The DSU Daughtercard (Figure 3-1) provides an RJ48S connector, on Port 1, that supports synchronous speeds of 56 kips and, under some conditions, Midpoint.



**Figure 3-1. 56K CSU/DSU Daughtercard**

The following Vanguard Networks' devices support the 56K CSU/DSU Daughtercard:

- Vanguard 340E
  - Vanguard 340
  - Vanguard 6435/6455
  - Vanguard 6840/6841
-



# Chapter 4

## DIM Daughtercard Installation

---

### Overview

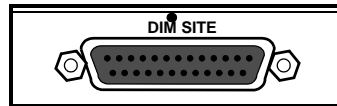
#### Introduction

This chapter describes the DIM Daughtercard.

#### Description

The DIM Daughtercard supports a single V.11, V.24, V.35, or V.36 DIM (Digital Interface Module) and can be set as either a DTE or DCE.

Figure 4-1 shows a DIM Daughtercard:



**Figure 4-1. DIM Daughtercard**

---

## Strapping the DIM Daughtercard

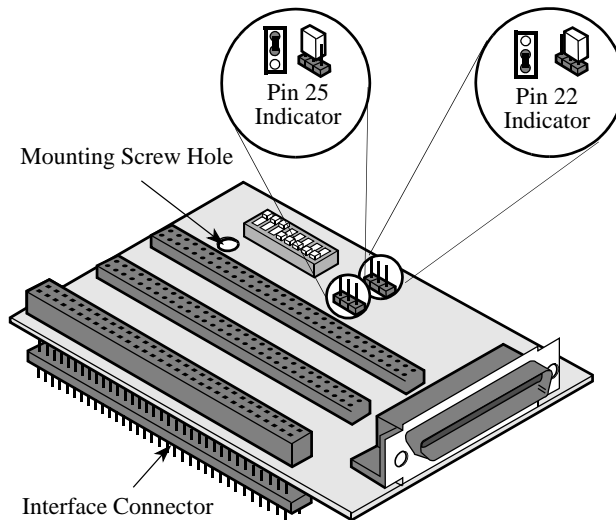
### Introduction

This section describes how to set the straps on the DIM Daughtercard.

### Description





The strapping on the DIM Daughtercard typically comes configured from the factory in Ring Indicator mode, which causes pin 22 on the DB25 connector to indicate the presence of an incoming call to the attached DTE. Otherwise, the strap is set to Test Mode (see Figure 4-2 and the table that follows).

Figure 4-2 shows the strap positions on the DIM Daughtercard:



**Figure 4-2. Strapping DIM Daughtercard**

This table describes the strap settings for the DIM Daughtercard:

| <i>For ...</i>  | <i>Switch position</i>   |
|---|--|
| Pin 22: This switch can be configured as an input and used as a Test Mode Indicator. It can also be configured as an output and used in the Ring Indicator mode when the port is configured to emulate a dial modem (DCE only). | Test Mode       |
|   | Ring Indicator  |
| Pin 25: This switch can be configured as an output, for a DCE device, and used as a “Make Busy.” It can also be configured as an input (Test Mode) when the port is a DTE.  | Test Mode       |
|   | Make Busy       |

## Setting the Switches on the DIM Daughtercard

### Introduction

This table identifies the DIP switch settings for the DIM Daughtercard:

| <i>For</i> | <i>Set Switch</i> | <i>To ...</i> | <i>Switch Positions</i> |
|------------|-------------------|---------------|-------------------------|
| V.11 DIM   | 1-5<br>6-8        | Off<br>On     |                         |
| V.24 DIM   | 1-5<br>6-8        | On<br>Off     |                         |
| V.35 DIM   | 1-5<br>6-8        | Off<br>On     |                         |
| V.36 DIM   | 1-5<br>6-8        | Off<br>On     |                         |

## Installing a DIM on a DIM Daughtercard

---

### Introduction

This chapter describes how to install DIMs in DIM Daughtercards.

---

### Description

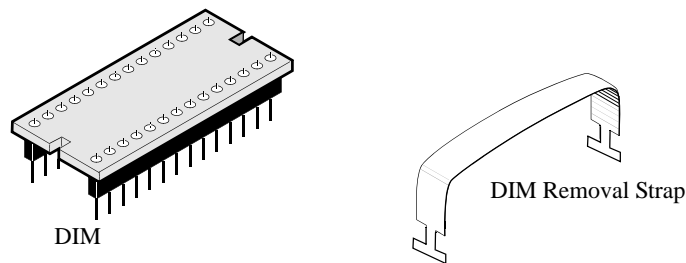
Five different DIM devices can be installed into DIM Daughtercards including: DSU DIM, V.11 DIM, V.24 DIM, V.35 DIM, and V.36 DIM.

---

### Packaging

Vanguard DIMs are shipped in a standard protective shipping carton.

A DIM extraction tool is provided to assist in DIM removal and replacement as shown in Figure 4-1.



**Figure 4-1. DIM and DIM Removal Tool**

## DIM Installation

### Introduction

This section describes how to install a DIM on the DIM daughtercard.

### Description

DIMs are installed into sockets provided on on the DIM Daughtercard.

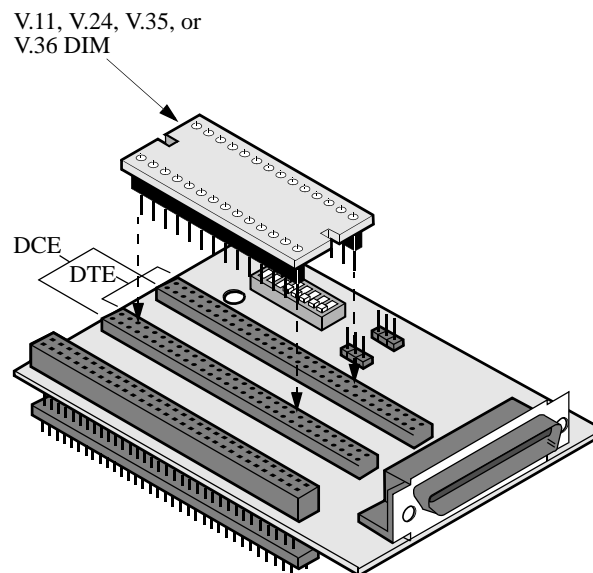
DIMs can be installed in either a DTE or DCE position. Once you have determined which function is required, verify that you install it in the correct position.

Figure 4-2 shows the functional positions of the DIM.



### Caution

For Australian applications, only qualified installation personnel should install this card.



**Figure 4-2. DIM Installation**



### Warning

Before installing the card, read the following safety advice carefully:

#### To Avoid any Harm to Yourself

*Before* installing the card, power down the Vanguard.

#### To Avoid Damaging the Card or the Vanguard product

Handle the card carefully. The electrical components are sensitive to static electricity. Before touching the card, make sure that you are not carrying any static electricity by touching a grounded metal object. **Do not** touch the connectors on the end of the card or the pins on the integrated circuits. The skin's natural oils can change the resistance of the contacts.



### Overview

#### Introduction

This chapter describes the Vanguard Networks' ISDN Daughtercards. They are:

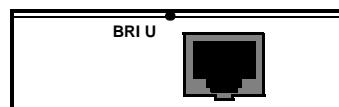
- ISDN BRI-U
- ISDN BRI-S/T
- Enhanced ISDN BRI S/T Data
- ISDN BRI S/T Voice

#### ISDN BRI-U Daughtercard

This card provides 2B+D Channel through an ISDN BRI U interface. It conforms to ANSI T1.601 1992 (2B1Q), is LAPD:ITU Q.921 compliant, and supports the following:

- Integral X.31
- Q.931 dial support
- NI1, 5ESS, DMS-100 switch types
- D Channel Packet Mode
- Leased Circuit Services (I Interface)
- Japan High-Speed Digital

Figure 5-1 shows the ISDN BRI-U Daughtercard connector as it appears on the back panel.



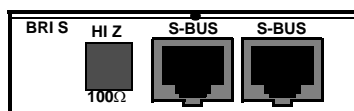
**Figure 5-1. ISDN BRI-U Daughtercard**

## ISDN BRI S/T Daughtercard

This card provides 2B+D Channel through a BRI S/T interface. It conforms to ITU I.430, is LAPD:ITU Q.921 compliant, and supports the following:

- Integral X.31
- Q.931 dial support
- NI1, 5ESS, DMS-100 switch types
- D Channel Packet Mode
- Leased Circuit Services (I Interface)
- Japan High-Speed Digital

Figure 5-4 shows the ISDN BRI Daughtercard connectors as they appear on the back panel.



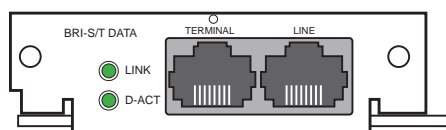
**Figure 5-2. ISDN BRI S/T Daughtercard**

## Enhanced ISDN BRI-S/T Daughtercard

This card provides 2B+D Channel through a BRI S/T interface. It conforms to ITU I.430, is LAPD:ITU Q.921 compliant, and supports:

- Integral X.31
- Q.931 dial support
- NI1, 5ESS, DMS-100, ETSI, Euro Numeris switch types
- D Channel Packet Mode
- Leased Circuit Services (I Interface)
- Permanent B for German Monopol support or Japan High-Speed Digital

Figure 5-3 shows the ISDN BRI-S/T Daughtercard connectors as they appear on the back panel.



**Figure 5-3. Enhanced BRI-S/T Daughtercard**

### ■ Note

Termination options for the enhanced ISDN BRI ST data Daughtercards are set in the Configure menu, and are not controlled by switches. For more information, refer to the *Vanguard Integrated Services Digital Network: ISDN Manual* (Part Number T0103-06).

## ISDN BRI Voice Daughtercard

This card provides 2B+D Channel through a BRI S/T interface. It conforms to ITU I.430, is LAPD:ITU Q.921 compliant, and supports:

- Integral X.31
- ITU-T Q.931 (EURO ISDN) - ETSI switch type to connect to PBXs and public networks.
- ECMA 143 - QSIG Basic Service to connect to PBXs over private line.
- ECMA 165 - QSIG Generic Functions for Support of PBX Supplementary Services.
- ITU-T G.711A (A-law) and G.711U ( $\mu$ -law) interface voice encoding.
- ITU-T G.723, G729, and Vanguard Networks proprietary CVSELP packet voice compression.

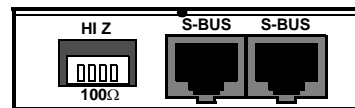
The BRI Voice feature provides basic rate ISDN Voice support for Vanguard products using the Voice Relay or Voice over IP features supported by Applications Ware. This feature is enabled by a CSK; QSIG\_OPTION.

The ISDN BRI Voice Daughtercard provides two connectors for ISDN Basic Rate Interface(s), one on the NT and one on the TE interface.

### ■ Note

The ISDN BRI Voice Daughtercard is currently not certified for connection to the Public Switched Telephone Network. The only application for this product is connection to a local PBX.

Figure 5-4 shows the ISDN BRI Voice Daughtercard connectors as they appear on the back panel.



**Figure 5-4. ISDN BRI Voice Daughtercard**

## ISDN Cables

### Introduction

This section describes the cables used with the ISDN Daughtercards.

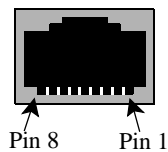
### Description

Each ISDN daughtercard ships with an ISDN connection cable. One end of the cable attaches directly to the daughtercard, and the other end connects to the service provider outlet. The connector pinouts are described below.

The S/T network cabling is intended for use within a building and not for wiring exposed to lightening or power cross. The interface to external (U network) wiring should be done with an isolating NT1 interface.

### Cable Connector Pin Numbers

The connector pins are numbered from right to left as shown in Figure 5-5:



**Figure 5-5. ISDN Connector Pin Out**

#### ■Note

The daughtercard connector can accept either an RJ11 or an RJ45 connector. If you use an RJ11 connector, do not use pin 1 and pin 8.

### Cable Connector Pinouts for U and S/T Daughtercards

This table shows the pinouts for the RJ45 connectors on the ISDN U and S/T daughtercard:

| Pin # | U Card         |                         | S/T Card |                                    |
|-------|----------------|-------------------------|----------|------------------------------------|
|       | 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                      |

### Cable Connector Pinouts for Voice Daughtercard

This table shows the pinouts for the RJ11 connectors on the BRI Voice Daughtercard:

| <b>Pin<br/>No.</b> | <b>Function</b>                     |                                     |
|--------------------|-------------------------------------|-------------------------------------|
|                    | <b>TE Connector</b>                 | <b>NT Connector</b>                 |
| <b>1</b>           | Power Source 3 +<br>(no connection) | Power Sink 3 +<br>(no connection)   |
| <b>2</b>           | Power Source 3 -<br>(no connection) | Power Sink 3 -<br>(no connection)   |
| <b>3</b>           | Transmit +                          | Receive +                           |
| <b>4</b>           | Receive +                           | Transmit +                          |
| <b>5</b>           | Receive -                           | Transmit -                          |
| <b>6</b>           | Transmit -                          | Receive -                           |
| <b>7</b>           | Power Sink 2 -<br>(no connection)   | Power Source 2 -<br>(no connection) |
| <b>8</b>           | Power Sink 2 +<br>(no connection)   | Power Source 2 +<br>(no connection) |

## Setting S/T and Voice ISDN Termination Resistance

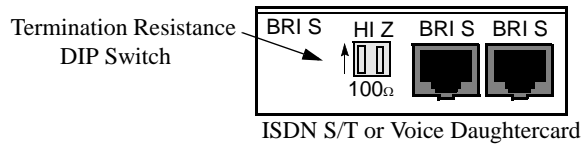
### Introduction

This section describes how to set terminal resistance on your ISDN S/T Daughtercard.

### Description

Termination resistance is controlled by a set of switches located on the rear of the Vanguard S/T ISDN device.

For a Vanguard S/T device, it is assumed that most configurations place the unit as the final device, and so 100Ω is the default setting of the termination resistance. This means you set DIP switches to the down position, as shown in Figure 5-6.



**Figure 5-6. Setting Termination Resistance on the Rear Connector**

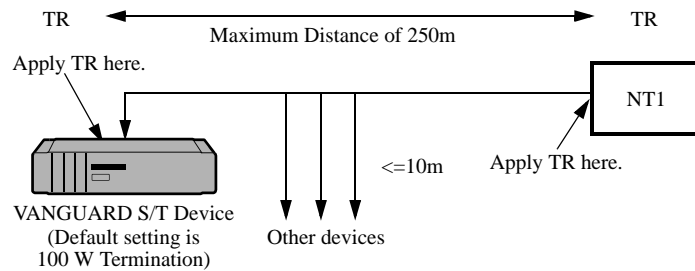
If your S/T device is not the termination device, set the termination resistance to Hi-Z.

**Note**

Vanguard products do 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 5-7 to 5-9 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 5-7. Short Passive Bus Configuration**

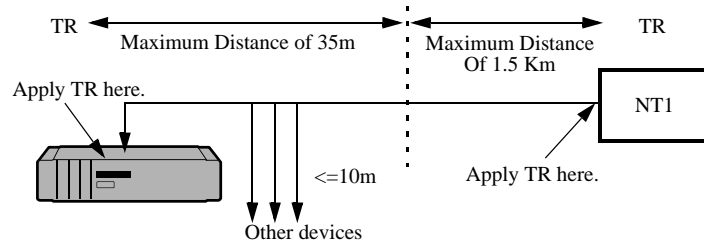


Figure 5-8. Extended Passive Bus Configuration

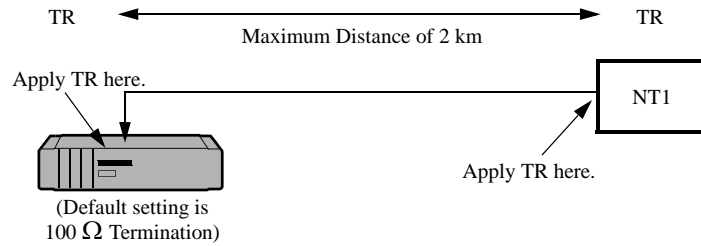


Figure 5-9. Point-to-Point Configuration

## European Approval Labels

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### **Introduction**

This section describes the European Approval Labels used with the ISDN Daughtercard.

---

### **Description**

When you install an ISDN S/T Daughtercard into a Vanguard product for first time use in countries such as Germany, France, and the Netherlands, it may be necessary for you to obtain certain approval labels. These labels, listed below, can be obtained from your vendor and must be applied to the underside of the Vanguard product.

- Germany - BZT ISDN S/T label A120 187F
  - France - DRG Approval label 96089B
  - Netherlands - NL 96211204 label
-

# Chapter 6

## FXO/FXS Voice Daughtercards

---

### Overview

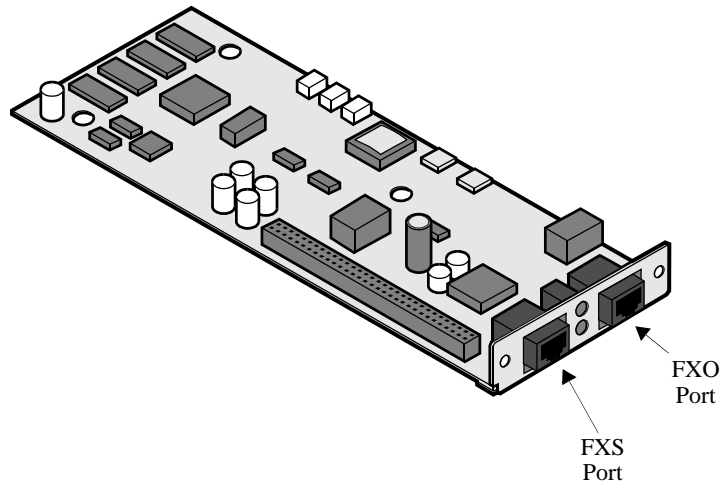
#### Introduction

This chapter describes the FXS/FXO, the Dual FXS, and the 4-Port FXS/FXO daughtercards.

#### FXS/FXO Daughtercard

The Vanguard Networks' FXS/FXO Daughtercard provides two RJ45 connectors for an FXS Port and an FXO Port.

illustrates the FXS/FXO Voice Vanguard Daughtercard.



**Figure 6-1. FXS/FXO Voice Daughtercard.**

#### FXS/FXO Connectors

The FXS/FXO Daughtercard provides RJ11 connectors for FXO and FXS Ports.

#### Interface Connection Cable Pinouts

This table shows the pinouts for the RJ11 FXS and FXO connectors.

| Pin # | FXS  |          | FXO   |                  |
|-------|------|----------|-------|------------------|
|       | Name | Function | Name  | Function         |
| 1     |      | N/A      |       | N/A              |
| 2     |      | N/A      | Aux B | External Handset |

| Pin # | FXS    |          | FXO (continued) |                  |
|-------|--------|----------|-----------------|------------------|
|       | Name   | Function | Name            | Function         |
| 3     | Loop B |          | Line B          |                  |
| 4     | Loop A |          | Line A          |                  |
| 5     |        | N/A      | Aux A           | External Handset |
| 6     |        | N/A      |                 | N/A              |

■ **Note**

Connect the FXS Interface to an analog telephone handset and/or fax machine only.

■ **Note**

Connect the FXO Interface to an analog PBX line only. The Vanguard One Port FXS/FXO daughtercard is not certified for use in a PSTN.



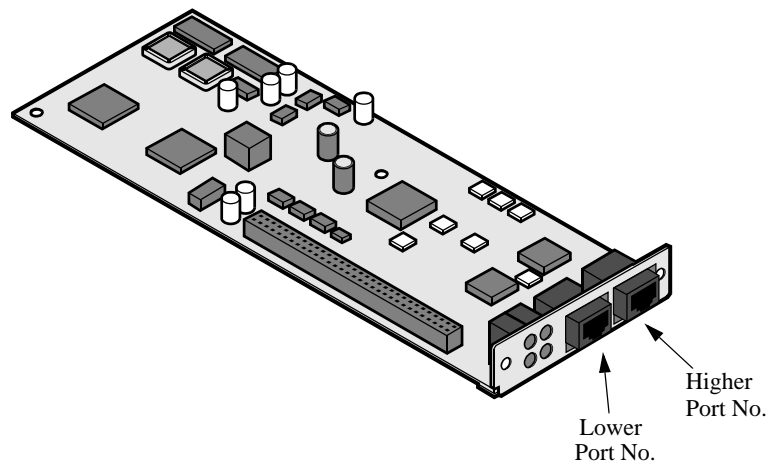
**Warning**

Only for connection with telephone equipment, do not connect this daughtercard directly to a network.

**Dual FXS Daughtercard**

The Vanguard Networks' Dual FXS Daughtercard provides two RJ45 connectors for FXS Ports.

Figure 6-2 shows the Dual FXS Daughtercard:



**Figure 6-2. Two Port FXS Daughtercard**

## Port Assignments

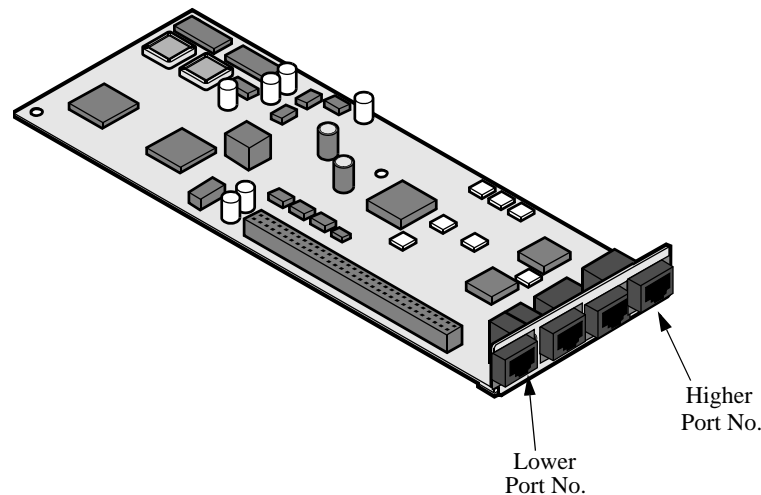
Unlike the One Port FXS/FXO Daughtercard, the Dual FXS Daughtercard can use both ports simultaneously. This table lists the port assignments for the card when it is installed in various Vanguard products:

| <i>Platform</i>  | <i>Port Assignments</i>           |
|--|-----------------------------------|
| Vanguard 340   | 1 and 6<br>2 and 7                |
| Vanguard 64xx  | 7 and 8<br>10 and 11<br>13 and 14 |
| Vanguard 68xx  |                                   |
| <b>■ Note</b><br>When looking at the rear panel, the port on the left has the lower number and the port of the right has the higher. |                                   |

## 4-Port FXS and FXO Daughtercards

The Vanguard Networks' 4-Port FXS and FXO Daughtercards provide four RJ45 connectors for FXS and FXO Ports. The installation procedure is identical for both cards. The 4-FXS/FXO Daughtercards are supported on the Vanguard 340, 6435/6455 line of routers.

Figure 6-3 shows the Four FXO and FXS Daughtercard



**Figure 6-3. Four Port FXO and FXS Daughtercard**

---

**Port Assignments**

The Four Port FXS and FXO Daughtercards can use all ports simultaneously. This table lists the port assignments for the card when it is installed in various Vanguard products:

| <b><i>Platform</i></b> | <b><i>Daughter Card</i></b> | <b><i>Voice Ports</i></b> |
|------------------------|-----------------------------|---------------------------|
| 340                    | 1                           | 50 51 52 53               |
| 340                    | 2                           | 60 61 62 63               |
| 64xx                   | 1                           | 50 51 52 53               |
| 64xx                   | 2                           | 60 61 62 63               |
| 64xx                   | 3                           | 70 71 72 63               |
| 68xx                   |                             |                           |
| 68xx                   |                             |                           |
| 68xx                   |                             |                           |

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# Chapter 7

## Dual E&M Daughtercard

### Overview

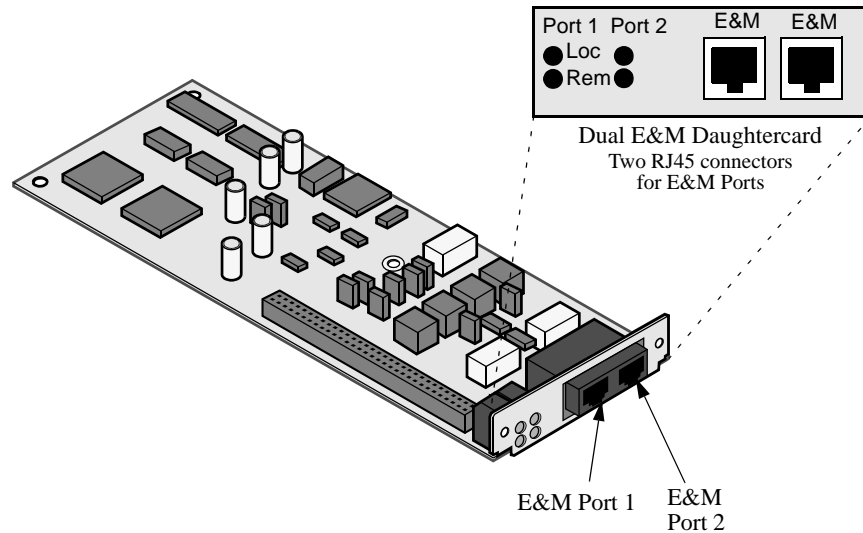
#### Introduction

This chapter describes the Vanguard Network's Dual E&M daughtercard.

#### Description

The Dual E&M Analog Interface Voice Daughtercard provides two RJ45 connectors for analog E&M ports.

Figure 7-1 shows the Vanguard Dual E&M Daughtercard.



**Figure 7-1. Vanguard Dual E&M Daughtercard**

#### Port Assignments

The Dual E&M Analog Interface Daughtercard can use both ports simultaneously. This table details the port assignments for the card when it is installed in various Vanguard products:

| <b>Platform</b>  | <b>Port Assignments</b> |
|--|-------------------------|
| Vanguard 340   | 1 and 6<br>2 and 7      |
| <p><b>■ Note</b><br/>When looking at the rear panel, the port on the left has the lower number and the port of the right has the higher.</p> |                         |

| <b>Platform (continued)</b>  | <b>Port Assignments</b>           |
|--|-----------------------------------|
| Vanguard 64xx  | 7 and 8<br>10 and 11<br>13 and 14 |
| Vanguard 68xx  |                                   |
| <p><b>■ Note</b><br/>When looking at the rear panel, the port on the left has the lower number and the port of the right has the higher.</p> |                                   |

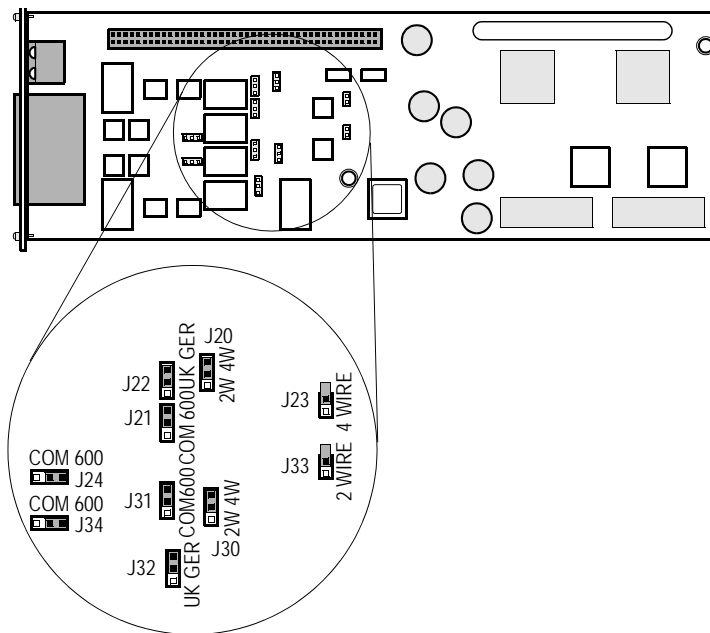
## Dual E&M Jumper Settings

### Introduction

This section describes the jumpers on the Dual E&M Card.

### Description

The Jumper locations on the Dual E&M Card are shown in Figure 7-2.



**Figure 7-2. Dual E&M Jumpers (J21-J24 and J31-J34)**

Jumpers J20 through J24 are associated with Port 1:

| <b>Jumper Number</b> | <b>4-Wire/600</b>            | <b>2-Wire/600</b>            | <b>2-Wire/UK Complex</b> | <b>2-Wire/Germany Complex</b> |
|----------------------|------------------------------|------------------------------|--------------------------|-------------------------------|
| J21                  | 600                          | 600                          | COM                      | COM                           |
| J20                  | 4W                           | 2W                           | 2W                       | 2W                            |
| J22                  | Don't Care (Default Germany) | Don't Care (Default Germany) | UK                       | Germany                       |

| <b>Jumper Number</b> | <b>4-Wire/<br/>600</b> | <b>2-Wire/<br/>600</b> | <b>2-Wire/UK<br/>Complex</b> | <b>2-Wire/<br/>Germany<br/>Complex</b> |
|----------------------|------------------------|------------------------|------------------------------|--|
| J23                  | 4W<br>(removed)        | 2W<br>(installed)      | 2W<br>(installed)            | 2W<br>(installed)                      |
| J24                  | 600                    | 600                    | COM                          | COM                                    |

Jumpers J30 through J34 are associated with Port 2:

| <b>Jumper Number</b> | <b>4-Wire/<br/>600</b>             | <b>2-Wire/<br/>600</b>             | <b>2-Wire/UK<br/>Complex</b> | <b>2-Wire/<br/>Germany<br/>Complex</b> |
|----------------------|------------------------------------|------------------------------------|------------------------------|--|
| J31                  | 600                                | 600                                | COM                          | COM                                    |
| J30                  | 4W                                 | 2W                                 | 2W                           | 2W                                     |
| J32                  | Don't Care<br>(Default<br>Germany) | Don't Care<br>(Default<br>Germany) | UK                           | Germany                                |
| J33                  | 4W<br>(removed)                    | 2W<br>(installed)                  | 2W<br>(installed)            | 2W<br>(installed)                      |
| J34                  | 600                                | 600                                | COM                          | COM                                    |

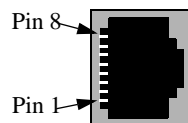
## Cable Pinout

### Introduction

This section describes the Cable Pinout on the Dual E&M Daughtercard.

### Description

The Dual E&M Daughtercard is equipped with RJ45 connectors supporting cables with this pinout:



| <b>Pin</b> | <b>Signal</b>  |
|------------|--|
| 1          | SG - Signal Ground   |
| 2          | E- Ear (Earth): Signalling output of the DPSM                  |
| 3          | R1- Ring 1: analog output of DPSM<br>(used with two-wire E&M)  |
| 4          | T1 - Tip 1: analog output of DPSM<br>(used with two-wire E&M)  |
| 5          | R - Ring: analog input to DPSM<br>(not used with two-wire E&M) |

## Cable Pinout

| <b>Pin</b> | <b>Signal (continued)</b>                                     |
|------------|---|
| 6          | T - Tip: analog input to DPSM<br>(not used with two-wire E&M) |
| 7          | M - Mouth (Magnet): signaling input to the DPSM               |
| 8          | SB - Signal Battery   |

## E&M Type

---

The E & M Type—Type I, II, IV, or V—is software configurable, and it does not require a hardware strap to configure type.

---

# Chapter 8

## RemoteVU Daughtercard

---

### Overview

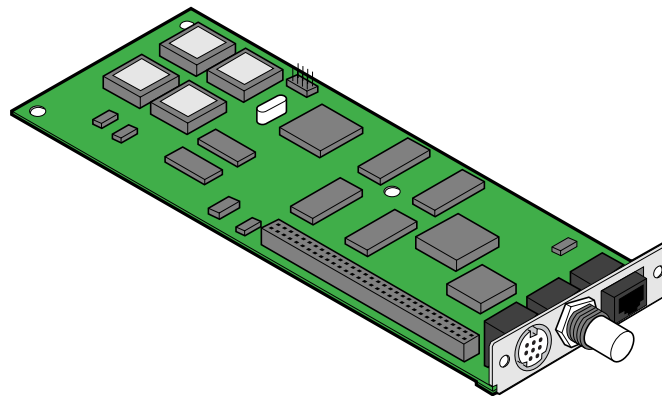
#### Introduction

This chapter describes the Vanguard Networks' RemoteVU Daughtercard.

#### Description

This RemoteVU Daughtercard contains a BNC connection for video inputs from a camera, an 8-pin mini DIN connector, and a 10/100BaseT RJ45 connection for a PC or Hub.

Figure 8-1 shows the RemoteVU Daughtercard:



**Figure 8-1. RemoteVU Daughtercard**

---

### RemoteVU™ Cable Connectors

#### Introduction

This section describes the RemoteVU™ Daughtercard connectors

#### Description

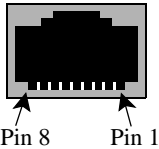
The RemoteVU™ Daughtercard comes with these connectors:

- RJ-45 connector – camera interface connector
- BNC connector – primary video input
- 8 Pin Mini-DIN – which connects to a custom cable that terminates in three

BNC connectors

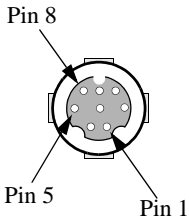
**RJ-45 Connector - Camera Interface Connector Pinout**

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

| <b>Pin</b> | <b>Function</b>                  | <b>Connector</b>  |
|------------|----------------------------------|---|
| 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                           |   |

**Eight Pin Mini-DIN Connector Pinout**

A custom video cable can be connected to this 8-pin Mini-DIN connector. This cable has one DIN connector at the RemoteVU daughtercard end and three separate connectors at the other. The three connectors are color coded as indicated in this table:

| <b>Pin</b> | <b>Function</b>   | <b>Connector</b>  |
|------------|---|---|
| 1          | Ground  |  |
| 2          | Ground  |   |
| 3          | Ground  |   |
| 4          | Ground  |   |
| 5          | Ground  |   |
| 6          | Composite video input #2. This pin connects to the red BNC connector on the custom video cable.   |   |
| 7          | Composite video input #3. This pin connects to the green BNC connector on the custom video cable. |   |
| 8          | Composite video input #4. This pin connects to the blue BNC connector on the custom video cable.  |   |

### Overview

#### Introduction

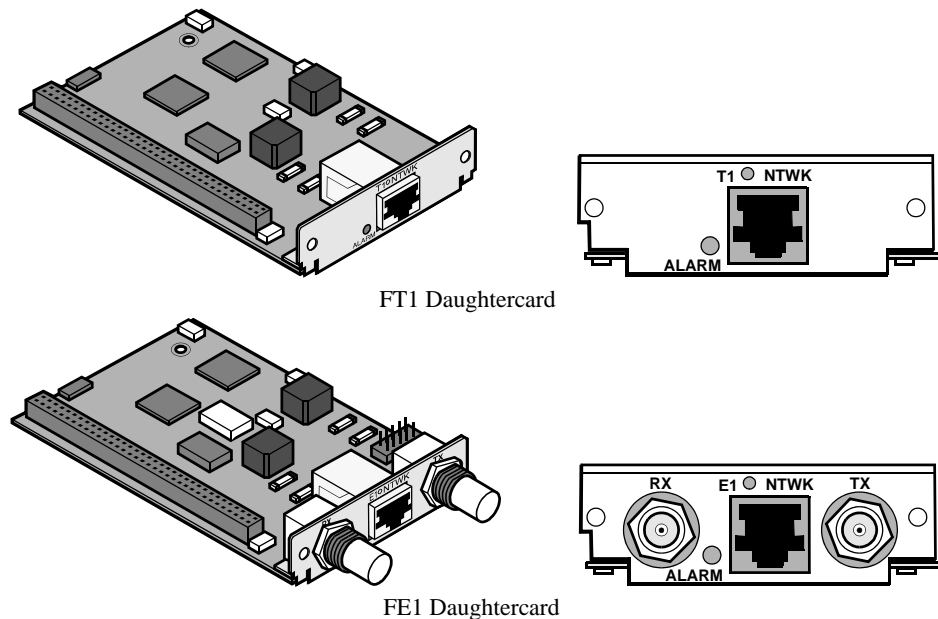
This chapter describes the Vanguard Networks' FT1/FE1 Daughtercard.

#### Description

The Vanguard 6435/6455 and 6840/6841 products support up to three or four T1 or E1 daughtercards, with three channel groups each. Each card connects one port to either a T1 or E1 leased line network. Essentially, this daughtercard acts as a T1 or E1 DSU/CSU DIM, providing up to three data pipes to Physical Ports. The FT1/ET1 Daughtercards are shown in Figure 9-1.

#### ■ Note

Only one FT1/FE1 Daughtercard can be installed in a Vanguard 340E/342 provided that product is running Applications Ware version 5.3 or greater.



**Figure 9-1. FT1/FE1 Daughtercards**

#### ■ Note

The FE1 daughtercard interface port is labeled with this marking. This specifies that the E1 interface complies with the Australian requirements ACA TS 016 - 1997 for connection to E1 SELV services. Also the E1 interface meets the IEC950 specifications for TNV1.

**FT1/FE1 Supported Functions**

The FT1/FE1 Daughtercard (D/C) has these functions:

- E1 with line rates of 2.048Mbps and data rates of 64Kbps per channel (max 31 channels).
- T1 with line rates of 1.544Mbps and data rates of 56Kbps or 64Kbps per channel (max. 24 channels).

**Note**

The FT1/FE1 Daughtercard only operates in these Vanguard devices:

- Vanguard 6840/6841
- Vanguard 6435/6455
- Vanguard 340E
- Vanguard 342

**Indicators**

This daughtercard has one indicator LED, on the rear panel. This LED is under software control and indicates:

- OFF: indicating Normal Operation, that is data passes from the network to the application.
- ON: indicating that an alarm condition exists. For specific information, you should refer to the T1/E1 Interface Statistics from the CTP Main menu.

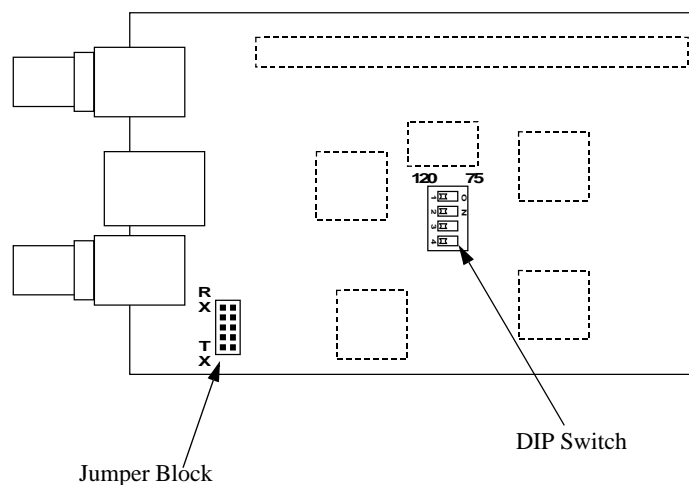
## FE1 Daughtercard Settings

**Introduction**

This section describes the switch and jumper settings for the FE1 Daughtercard.

**Description**

The FE1 daughtercard is equipped with a Jumper Block and a set of four DIP switches. Figure 9-2 illustrates the jumper and switch locations on this daughtercard:



**Figure 9-2. E1 Daughtercard Jumpers and DIP Switches**

**FE1 DIP Switch Settings**

The four DIP switches on the FE1 daughtercard are used to set the proper termination impedance. These switches must be set correctly so that this daughtercard operates correctly within the E1 network. This table identifies the correct switch settings.

| <b>Setting</b> | <b>Description</b>  |
|----------------|---|
|                | For correct operation in a 120Ω network, all four switches must be pushed towards the 120 marking.      |
|                | For correct operation in a 75Ω network, all four switches must be pushed towards the <b>75</b> marking. |

**FE1 Jumper Settings**

This daughtercard is equipped with a 10-pin jumper block to properly ground the termination according to the requirements of your network. This table identifies how to set these jumpers:

| <b>Setting</b> | <b>Description</b>  | <b>Use</b>  |
|----------------|---|---|
|                | The terminations are balanced and are not grounded.   | This configuration is required when the FE1 daughtercard is connected to a balanced 120Ω network.         |
|                | TRING, which is the coax shield of the TX pair, is grounded directly.<br>RRING, which is the coax shield of the RX pair, is not grounded. | This configuration is ordinarily used when the FE1 daughtercard is connected to a unbalanced 75Ω network. |

**FE1 Daughtercard Settings**

| <b>Setting</b> | <b>Description (continued)</b>   | <b>Use (continued)</b>  |
|----------------|--|---|
|                | <p>TRING is grounded directly.<br/>RRING is grounded through a decoupling capacitor.</p> | <p>This configuration is required in New Zealand whenever the FE1 daughtercard is connected to a unbalanced 75Ω network.</p>    |
|                | <p>TRING and RRING are grounded directly.</p>  | <p>You telephone company or network manager may request that this configuration be used in certain unbalanced 75Ω networks.</p> |

# Chapter 10

## V.34 Daughtercard

---

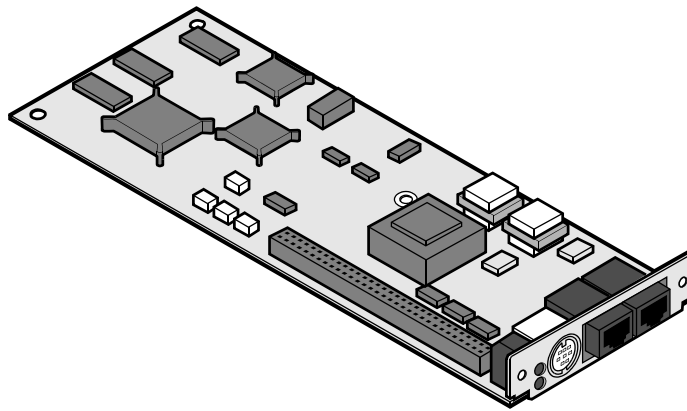
### Overview

#### Introduction

This chapter describes the Vanguard Networks V.34 Daughtercard.

#### Description

The V.34 Daughter card contains two RJ-45 ports and a mini-DIN connector. Figure 10-1 shows the V.34 daughtercard.



**Figure 10-1. V.34 Daughtercard**

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# Chapter 11

## V.90 Daughtercard

---

### Overview

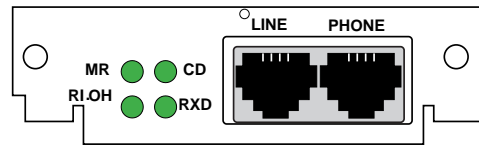
#### Introduction

This chapter describes the Vanguard Networks V.90 Daughtercard.

#### Description

The V.90 modem daughtercard provides Async PPP dial back-up for a customers' applications or can be used for Async dial connections such as remote CTP access. The V.90 uses a dual RJ-11 for connection to central offices, PBXs or telephone systems. V.90 is designed for the Vanguard 6840 and 6841.

Figure 11-1 shows the rear panel connections for the V.90 daughtercard.



**Figure 11-1. V.34 Daughtercard**

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# Chapter 12

## 2-Port Serial Daughtercard

---

### Overview

#### Introduction

This chapter describes the Vanguard Networks 2-Port Serial Daughtercard.

#### Description

The 2-Port serial data card has two Sync/Async Universal Serial DCE ports (V.11/X.21, V.24/RS232, V.35, or V.36). These ports are independent of each other and require a Y-cable which provides two DB25 ports. The required Y-cable is supplied with the card or can be ordered separately.

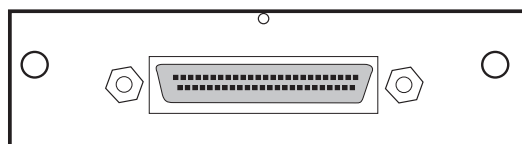
#### ■Note

A cable adapter is required to use current Vanguard Networks Adapter Cables when running V.11, V.35, or V.36.

To emulate a DTE port, the special cables listed below are also required.

- For V.11/X.21, use 51176 and DCE-DTE cable adapter 1152-10022
- For V.24/RS232, use 80110 (or equivalent)
- For V.35 or V.36, use 51176 and DCE-DTE cable adapter 1152-10021

Figure 12-1 shows the rear panel connections for the V.90 daughtercard.



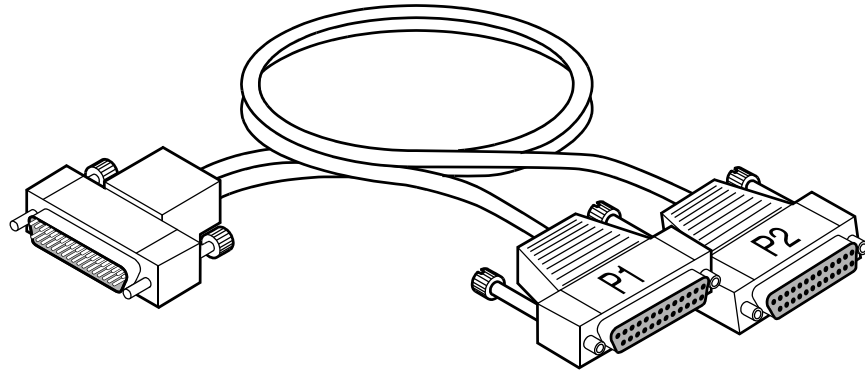
**Figure 12-1. 2-Port Serial Daughtercard**

#### Cabling 2-Port Serial Card

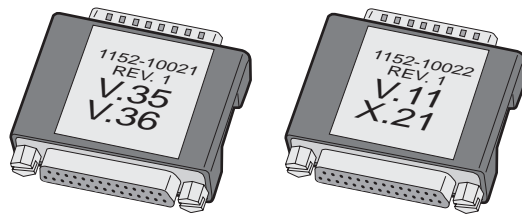
The 2-Port Serial Card comes with one Y-Cable Adapter as shown in Figure 12-2. They allow the connector on the rear of the 2-Port Serial Card to support two ports.

#### ■Note

The Cable Adapter (Figure 12-3) is required on all Universal Serial Ports (motherboard and 2-Port Serial Data Card) to use existing Vanguard Networks Adapter Cables when running high-speed V.11/X.21, V.35, or V.36.



**Figure 12-2. 2-Port Serial Card Y-Cable**



**Figure 12-3. Cable Adapters**

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### Overview

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#### Introduction

This chapter describes how to install memory modules such as SIMMs (Single In-line Memory Module) and DIMMs (Dual In-line Memory Module) into various Vanguard products.

---

#### Why Install a Memory Modules?

There are several reasons for installing SIMMs and or DIMMs into Vanguard products:

- There are fewer than 100 Packet Buffers available in the node. *Check the number of available Packet Buffers by examining the second page of the node statistics.*
- Packet Buffers are used to receive and transmit frames on all ports. If there are not enough buffers available, frames could be discarded when bursts of data are received on the LAN port. This results in retransmissions and reduced network performance.
- You plan to have more than two hundred simultaneous X.25 calls in place within the node (either over an X.25 link or over an Annex G station on a Frame Relay link). The node requires 2 or 3 Data Buffers for each of the X.25 connections.
- The node generates alarms indicating that there is not enough memory available to initialize some of the ports.
- To add Data Compression or Data Encryption functionality to your Vanguard device.

## **SIMM and DIMM Compatibility and Locations**

---

**Introduction** This section describes the locations of SIMMs and DIMMs in Vanguard Networks' devices.

---

**Description** You can install SIMMs in Vanguard, 340, 64xx, and 68xx Series products. The Vanguard 340 supports a Synchronous DRAM (SDRAM) DIMM.



### **Caution**

For Australian applications, only qualified installation personnel should install these SIMMS.

## **Vanguard 340E/342 SIMM Installation and Removal**

---

**Introduction** This section describes how to install or remove SIMM devices in all Vanguard Networks 340E/342.

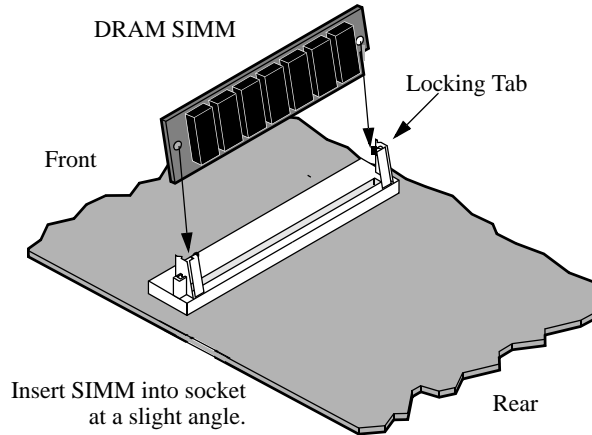
---

**Description** The installation and removal of SIMM devices is somewhat similar across all Vanguard Networks' products. This section describes the specific procedures necessary to remove and to replace SIMMs in the Vanguard 340E/342 devices.

---

**Installing and Removing SIMMs** Refer to Figure 13-4 and follow this procedure to remove and install DRAM SIMMs in Vanguard 340E/342 devices:

| <b>Step</b> | <b>Action</b>   |
|-------------|---|
| <b>1</b>    | Insert the SIMM into a slot at a slight angle.  |
| <b>2</b>    | Press the SIMM into the socket and then push it forward into the clips.   |
| <b>3</b>    | Make sure it locks in place with the locking tabs.  |
| <b>4</b>    | To remove the SIMM, disengage the locking levers by pushing them outward, and push the SIMM toward the rear of the unit so the SIMM disengages from the locking tabs. |
| <b>5</b>    | Lift out the SIMM.  |



**Figure 13-4. Typical SIMM Installation/Removal**

**Vanguard 340E/342  
FLASH, Data  
Compression and  
Data Encryption  
SIMMs, and  
SDRAM DIMM**

Figure 13-5 shows how to add or remove a Flash or Data Compression/Encryption SIMM and a Synchronous DRAM (SDRAM) DIMM for the Vanguard 340E/342. These memory modules are available:

- SDRAM DIMM: Slot U173
- FLASH SIMM: Slot U181
- Data Compression/Data Encryption SIMM: Slot J39



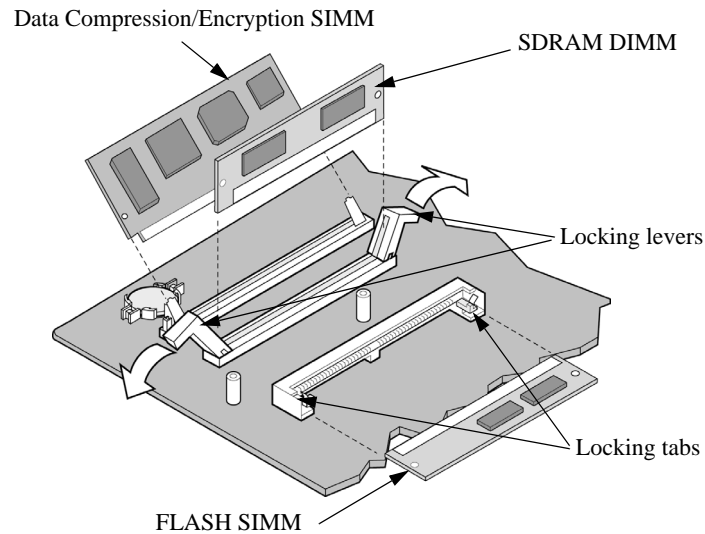
**Caution**

Be careful when installing a Data Compression/Encryption SIMM. These SIMM slots look very similar and you may accidentally place them in the wrong SIMM slot which could damage the equipment. Adding/Removing SDRAM SIMMs

**Adding or  
removing SDRAM  
SIMMs**

Refer to Figure 13-5, and follow the procedures below to add or remove a SDRAM SIMM in a 340E/342 device:

| <b>Step</b> | <b>Action</b>  |
|-------------|--|
| <b>1</b>    | Insert the SIMM into slot as shown.  |
| <b>2</b>    | Carefully press the SIMM into the socket.  |
| <b>3</b>    | Lock the SIMM into place with the locking levers.  |
| <b>4</b>    | To remove the SIMM, disengage the locking levers by pushing them forward, and then lift out the SIMM |



**Figure 13-5. Vanguard 340E/342 FLASH, Data Compression/Encryption SIMM, and SDRAM DIMM Installation**

**Adding/Removing FLASH SIMMs**

Refer to Figure 13-5, and follow the procedures below to add or remove a FLASH SIMM in a Vanguard 340E/342:

| <b>Step</b> | <b>Action</b>  |
|-------------|--|
| <b>1</b>    | At a slight angle, insert the SIMM into connector as shown.  |
| <b>2</b>    | Carefully press the SIMM down, pushing the locking tabs through the holes. The clips click into place. |
| <b>3</b>    | To remove the SIMM, use your fingers to push back the two metal retaining clips and lift out the SIMM. |

**Adding/Removing Data Compression/Encryption SIMMs**

Refer to Figure 13-5, and follow the procedures below to add or remove a Data Compression Encryption SIMM in a Vanguard product:

| <b>Step</b> | <b>Action</b>  |
|-------------|--|
| <b>1</b>    | At a slight angle, insert the SIMM into the connector, lining up the holes with the tab as shown.      |
| <b>2</b>    | Carefully press the SIMM down, pushing the locking tabs through the holes. The clips click into place. |
| <b>3</b>    | Lock the SIMM into place with the locking levers.  |
| <b>4</b>    | To remove the SIMM, use your fingers to push back the two metal retaining clips and lift out the SIMM. |

# Vanguard 64xx Series FLASH, Data Compression, and Data Encryption SIMMs

## Introduction

This section describes how to remove a Flash or Data Compression SIMM for the Vanguard 64xx Series.

## Description

Figure 13-6 shows how to add or remove a Flash or Data Compression SIMM for the 64xx Series. These SIMMs are available:

- Data Compression and Data Encryption SIMMs: Slot U56
- DRAM SIMM: Slot U60
- FLASH SIMM: Slot U108



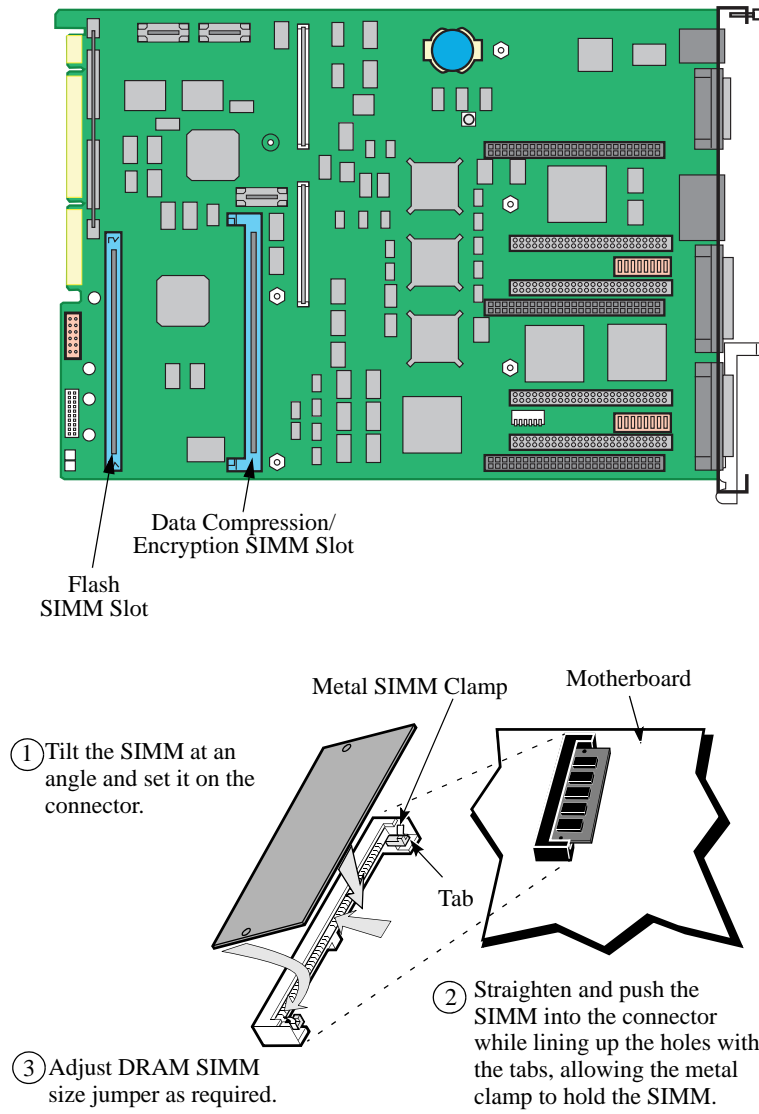
## Caution

Be careful when installing a Data Compression SIMM or a Flash SIMM. These SIMMs look very similar and you may accidentally place them in the wrong SIMM slot which could damage the equipment.

## Adding or Removing the SIMM

Refer to Figure 13-6, and follow the procedures below to add or remove a Flash or Data Compression SIMM for the 64xx Series:

| <b>Step</b> | <b>Action</b>  |
|-------------|--|
| <b>1</b>    | At a slight angle, insert the SIMM into the connector, lining up the holes with the tab as shown.      |
| <b>2</b>    | Carefully press the SIMM down, pushing the locking tabs through the holes. The clips click into place. |
| <b>3</b>    | Lock the SIMM into place with the locking levers.  |
| <b>4</b>    | To remove the SIMM, use your fingers to push back the two metal retaining clips and lift out the SIMM. |

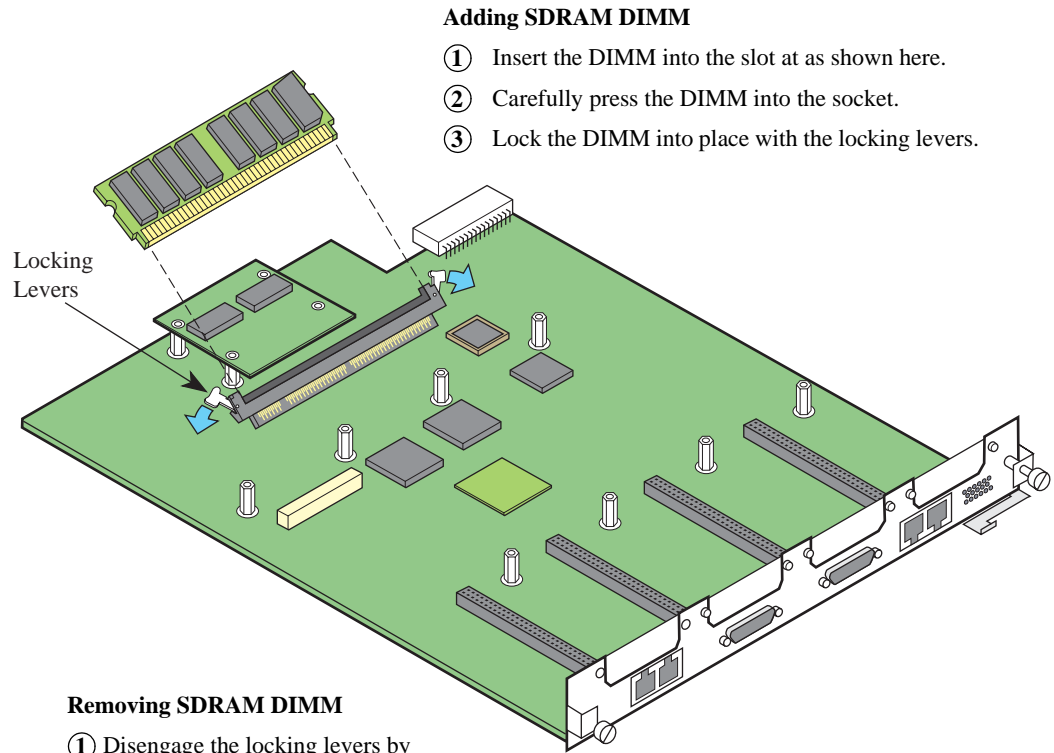


**Figure 13-6. Vanguard 64xx Series FLASH, Data Compression, and Data Encryption SIMM Installation**

## Vanguard 68xx Series SDRAM DIMM

### Adding or Removing the SDRAM DIMM

Refer to Figure 13-7, and follow the procedures within the figure to add or remove a SDRAM DIMM for the 68xx Series



**Figure 13-7. Vanguard 68xx Series SDRAM DIMM Installation**



## Numerics

2-Port Serial Y-cable [1](#)

## C

Cabling

2-Port Serial Data Card [1](#)

## D

Daughtercard

DIM [1](#)

ISDN BRI-ST [2, 3](#)

ISDN BRI-U [1](#)

Daughtercards

One Port FXS/FXO [1](#)

Packaging [4](#)

DIM

DCE Port [5](#)

DTE Port [5](#)

sockets [5](#)

DIM Daughtercard [1](#)

DIM devices [4](#)

DIM Site Daughtercard [1, 5](#)

DIP switches [3](#)

strapping [2](#)

DRAM SIMMs

Compatibility [2](#)

installation and removal [2](#)

DSU [1](#)

adding/replacing [3, 4](#)

speeds of 56 kbps [1](#)

DSU Daughtercard [1](#)

Dual E&M Daughtercard

cable pinout [3](#)

jumper settings [2](#)

port assignments [1](#)

## E

Enclosure

opening [2, 6, 10](#)

## F

FT1/FE1 Daughtercard

functionality [2](#)

## I

ISDN BRI-S/T Daughtercard [2, 3](#)

ISDN BRI-U Daughtercard [1](#)

## L

locking tabs [2](#)

## M

Make Busy

DCE [2](#)

Multipoint [1](#)

## O

One Port FXS/FXO Connectors

Pinouts [1](#)

Opening the enclosure [2, 6, 10](#)

## R

RemoteVU

Connectors [1](#)

Ring Indicator [2](#)

## S

SIMM

location [2](#)

## T

Test Mode [2](#)

DTE [2](#)

Two Port FXS Daughtercard

Installation [2](#)

Port Assignments [3, 4](#)

## V

Vanguard 320

termination resistance [6](#)

Vanguard 340

Installing Daughtercards [2](#)

Removing the Motherboard [2](#)

Replacing the Motherboard [2](#)

Vanguard 6400 Series

daughtercard support [6](#)

Installing Daughtercards [7, 11](#)