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VMIVME-5740
6U VMEbus Ultra320 SCSI Hard Disk Drive Carrier

Installation Guide

A GE Fanuc Company

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Huntsville, Alabama 35803-3308, USA
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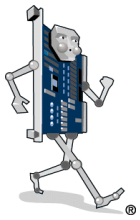
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CHAPTER

1

Configuration and Installation

Contents

Unpacking Procedures 10
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Introduction

This chapter describes the installation and configuration of the board. Cable configuration and board layout are also illustrated in this chapter.

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Unpacking Procedures

CAUTION: Some of the components assembled on VMIC's products may be sensitive to electrostatic discharge and damage may occur on boards that are subjected to a high-energy electrostatic field. When the board is placed on a bench for configuring, etc., it is suggested that conductive material should be inserted under the board to provide a conductive shunt. Unused boards should be stored in the same protective boxes in which they were shipped.

Upon receipt, any precautions found in the shipping container should be observed. All items should be carefully unpacked and thoroughly inspected for damage that might have occurred during shipment. The board(s) should be checked for broken components, damaged printed circuit board(s), heat damage, and other visible contamination. All claims arising from shipping damage should be filed with the carrier and a complete report sent to VMIC together with a request for advice concerning the disposition of the damaged item(s).

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Physical Installation

CAUTION: Do not install or remove the board while power is applied.

VMIC recommends examining the host system installation procedures prior to installing this board. The following procedure outlines the installation of the VMIVME-5740 into a suitable VMEbus chassis with an available peripheral slot.

1. Turn off power to the VMEbus chassis.
2. Install the VMIVME-5740 firmly onto the backplane connectors (refer to Figure 1-1 for installation of the VMIVME-5740). Install the screws to secure the VMIVME-5740 front panel to the chassis.
3. Power up the chassis, installation complete.

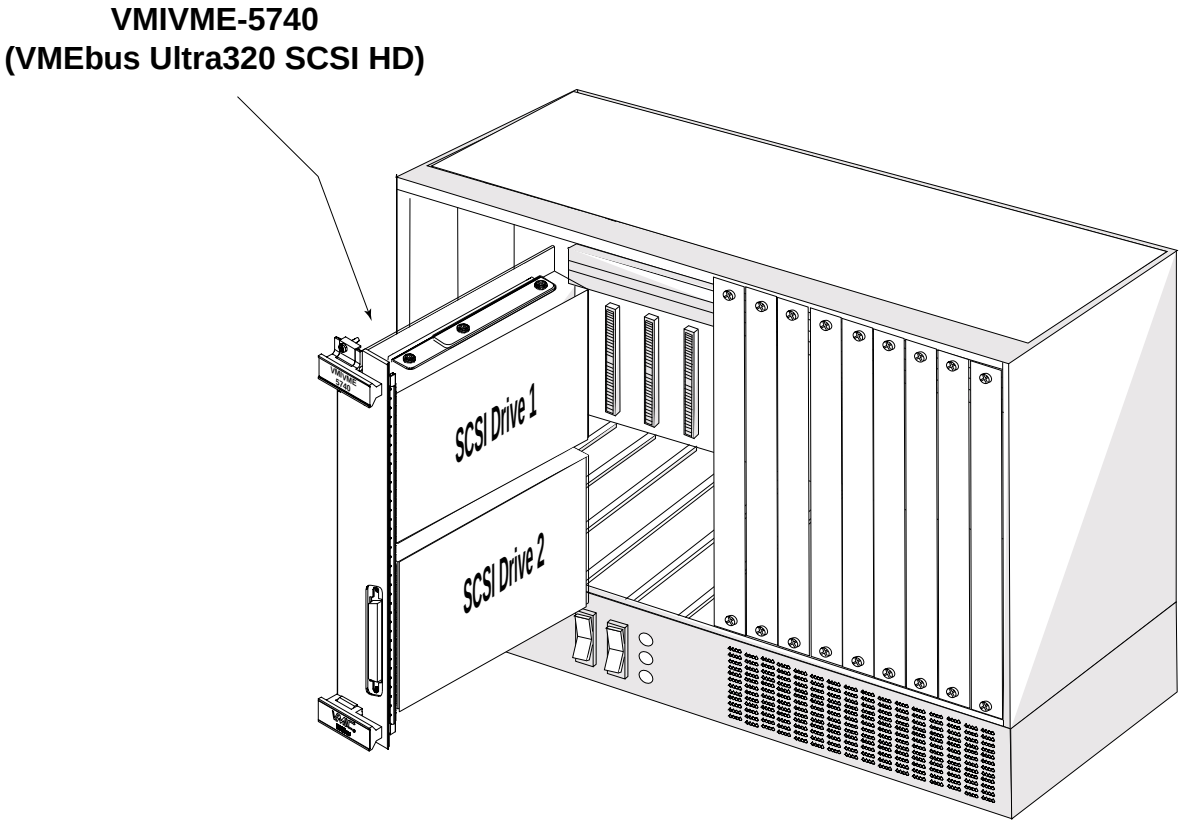


Figure 1-1 Installing the VMIVME-5740

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SCSI Configuration Switches

SCSI Configuration Switches S1 and S4

Switches S1 and S4 are used to select the SCSI ID, Delay Drive 0 and 1, Remote Start and Spindle Sync for the hard drives connected to P3 and P4. Switch S1 is for connector P3 (SCSI drive 1) and S4 for P4 (SCSI drive 2). Table 1-1 below outlines the switch position and functions. See Figure 1-3 on page 14 for location of Switches S1 and S4.

Table 1-1 Switches S1 and S4 Configuration

SW1 Pos.	Function	SW4 Pos.	Function
1	SCSI (0) ID0	1	SCSI (1) ID0
2	SCSI (0) ID1	2	SCSI (1) ID1
3	SCSI (0) ID2	3	SCSI (1) ID2
4	SCSI (0) ID3	4	SCSI (1) ID3
5	SCSI Delay Start 0 (DLYD0_Start)	5	SCSI Delay Start 1 (DLYD1_Start)
6	SCSI Remote Start 0 (RMT0_Start)	6	SCSI Remote Start 1 (RMT1_Start)
7	*SCSI Spindle_Sync1	7	*SCSI Spindle_Sync1
8	N / A	8	N / A
NOTE: * For Spindle_Sync to work, both S1 and S4 must be On.			

SCSI ID Configuration

The SCSI device address of the attached drive is determined by the state of the signals SCSI ID(0-3). Table 1-2 indicates the relationship between the level of the SCSI ID signals and the selected SCSI device address.

Table 1-2 SCSI Device ID Selection Signals

Address	ID0	ID1	ID2	ID3
0	Off	Off	Off	Off
1	On	Off	Off	Off
2	Off	On	Off	Off
3	On	On	Off	Off
4	Off	Off	On	Off
5‘	On	Off	On	Off
6	Off	On	On	Off
7	On	On	On	Off
8*	Off	Off	Off	On
9*	On	Off	Off	On
10*	Off	On	Off	On
11*	On	On	Off	On
12*	Off	Off	On	On
13*	On	Off	On	On
14*	Off	On	On	On
15*	On	On	On	On
NOTE: * Addresses in the range of 8 through 15 are only supported by drives implementing the 16-bit SCSI option.				

NOTE: Some SCSI drives allow jumper configuration directly on the rear of the drive. **DO NOT** use the jumper configuration options on the SCSI drives. See Figure 1-2 on page 13.

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NOTE: DO NOT USE THE JUMPER CONFIGURATION ON THE DRIVES

Figure 1-2 SCSI Drive Configuration Jumpers

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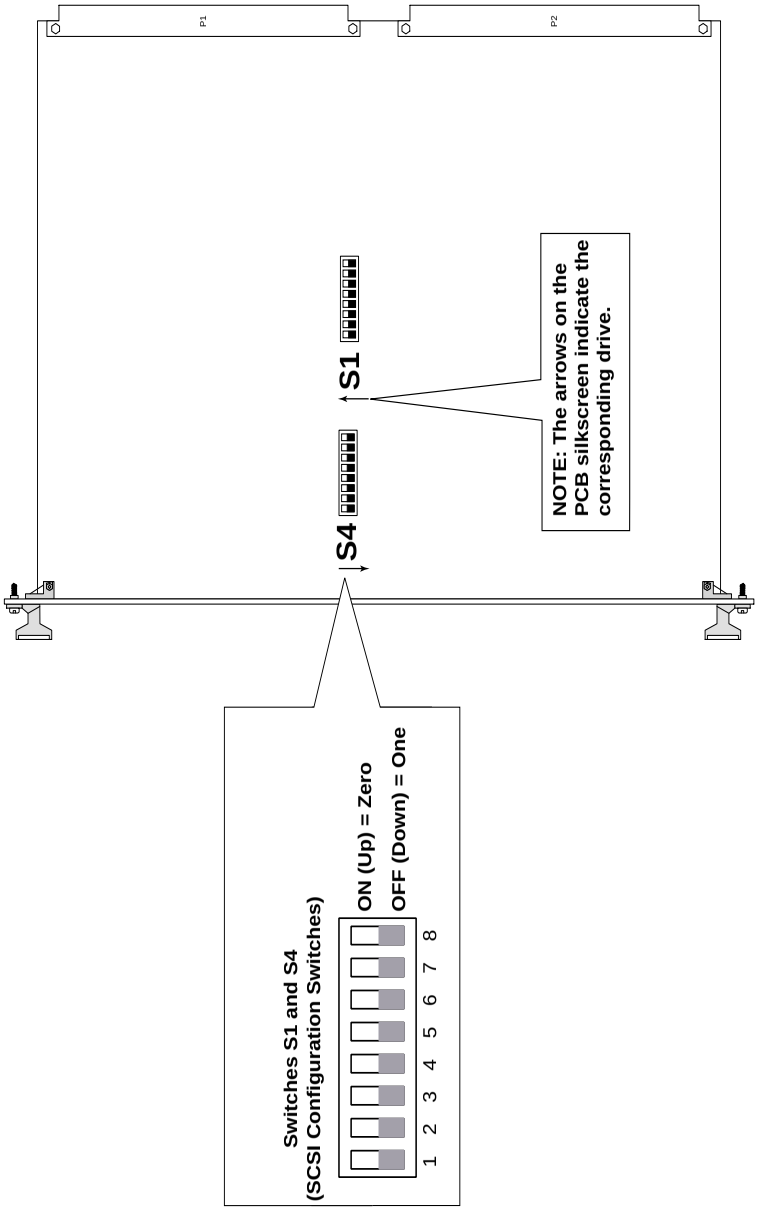


Figure 1-3 Location of SCSI Select Switches

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SCSI Connectivity

Typical SCSI Connectivity

Figure 1-4 below illustrates the typical connectivity of the VMIVME-5740 with a host SBC.

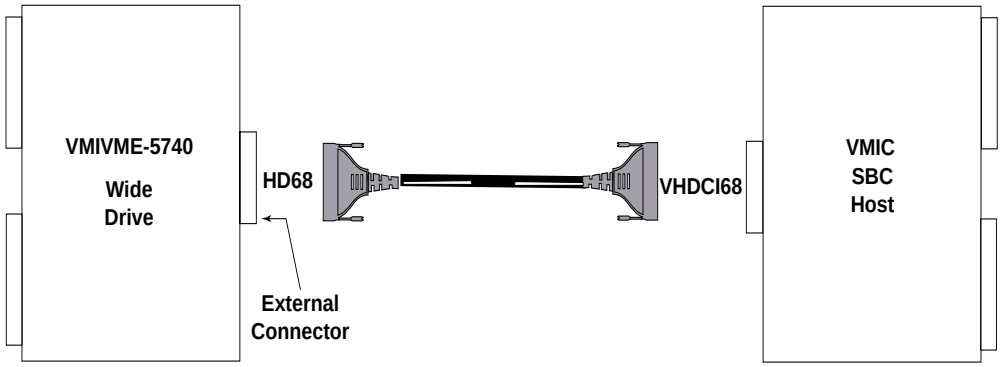


Figure 1-4 Typical VMIVME-5740 Connectivity

SCSI Chain Connectivity

In a multi-drop SCSI bus, the VMIVME-5740 must be connected at the end of the SCSI bus. The front panel SCSI connector is a 68-position high density, female receptacle. See Figure 1-5 below for an illustration of connecting SCSI devices in a chain.

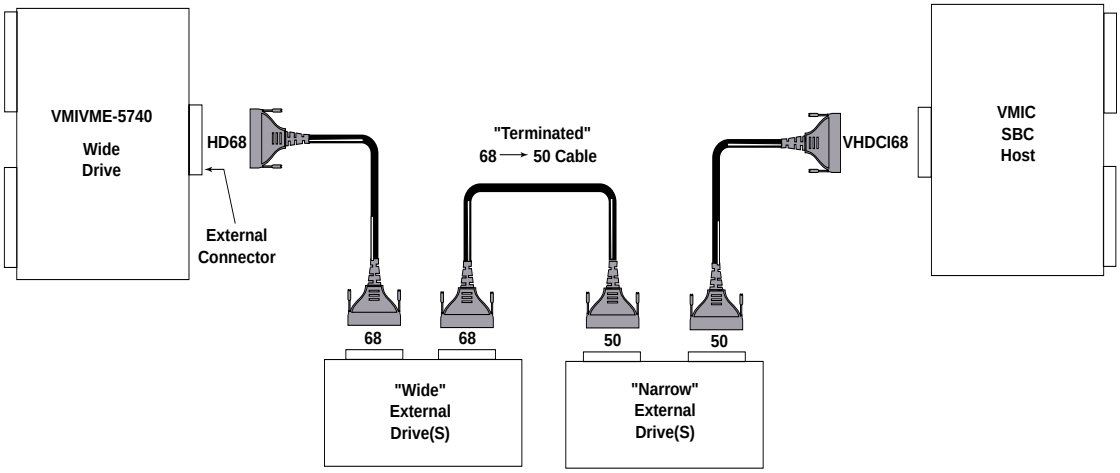


Figure 1-5 SCSI Chain Connectivity

NOTE: The VMIVME-5740 must be connected at the end of the SCSI bus.

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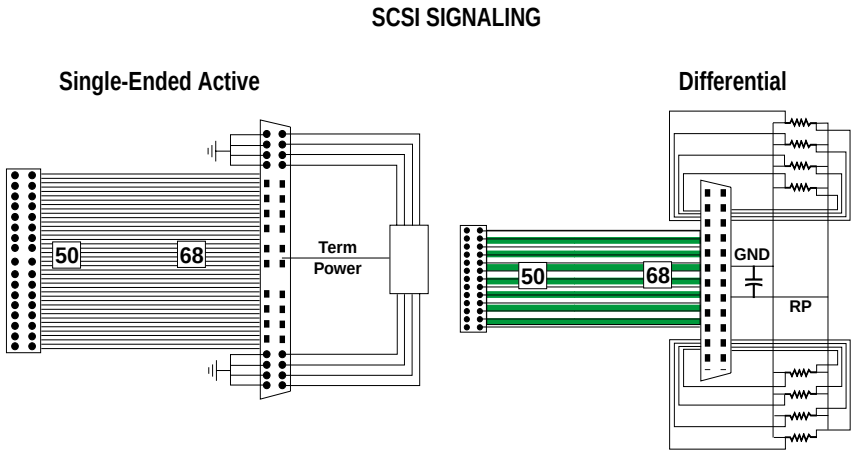


Figure 1-6 SCSI Single-Ended and Differential Schematic

Ultra320

When Ultra320 SCSI is used with low-voltage differential (LVD) signaling, cable lengths up to 12 meters must be maintained to provide full backward compatibility. Ultra320 SCSI can connect up to 16 devices on a single channel. Table 1-3 below is a comparative matrix comparing Ultra320 SCSI against other connectivity technologies.

Table 1-3 Comparative Matrix

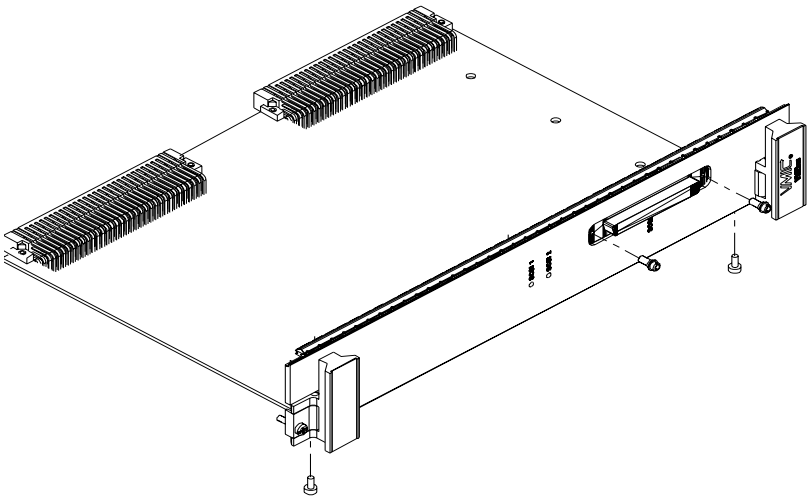
	Maximum Transfer Speed	Maximum Cable Length	Maximum Number of Devices	Application Performance
IDE / UDMA 33	33MB / sec.	18 inches	2	Low
IDE / UMDA 66	66MB / sec.	18 inches	2	Low / Medium
Wide Ultra SCSI	40MB / sec.	1.5 meters	16	Low / Medium
Wide Ultra2 SCSI	80MB / sec.	12 meters	16	High
Fibre Channel	200MB / sec.	10K meters	126	High
Ultra160 SCSI	160MB / sec.	12 meters	16	High
Ultra320 SCSI	**320MB/sec.**	**12 meters**	**16**	**High**

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Installation of SCSI Hard Disk Drives

The VMIVME-5740 will accommodate two SCSI hard disk drives installed on the board. The following procedure is used to install the drives.

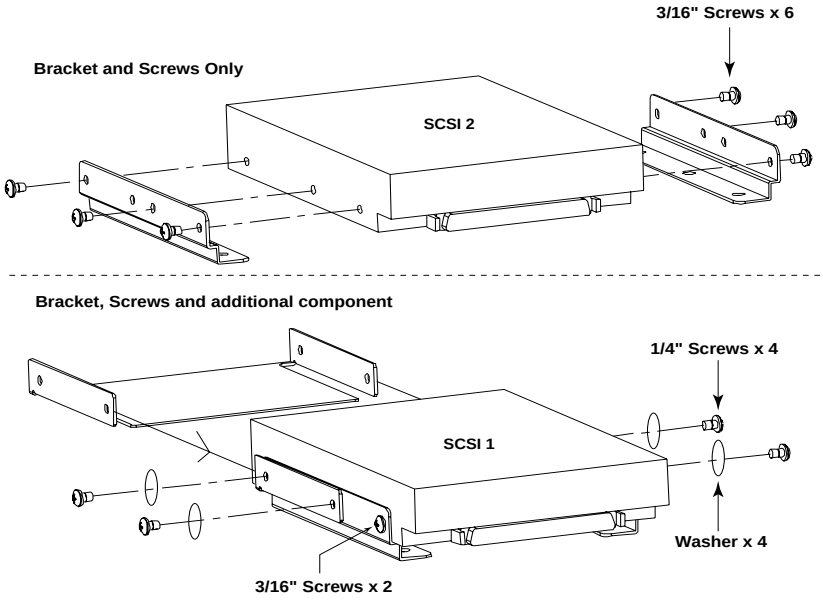
1. Locate the two screws that secure the front panel to the board. Using a #1 Phillips Head screwdriver remove the two screws (see Figure 1-7). Using a flat blade screwdriver, remove the two jack screws holding the SCA-2 connector to the front panel.



Assembly Hardware	
Mounting Brackets	4 Brackets 2 per Drive
Screws	1/4” screws x 16 3/16” screws x 8
Washers	4 washers

Figure 1-7 Removing the Front Panel

2. Using the supplied screws and the #1 Phillips Head screwdriver, secure the brackets to the hard drives (see Figure 1-8 below).



NOTE: SCSI #1 drive requires an additional bracket.

Figure 1-8 Securing the Brackets to the Hard Disk Drives

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3. Before installing the hard drives on the carrier, ensure that the carrier is set up for the desired SCSI ID, Delay Drive 0 and 1, Remote Start and Spindle Sync (see *SCSI Configuration Switches S1 and S4* section on page 12).

4. After installing the brackets on the hard drives, mount the drives on the carrier using the 12 supplied screws. See Figure 1-9 below for an illustration of the installation. When installing the hard drives on the carrier, ensure that the SCA-2 connectors on both the hard drives and the carrier are aligned correctly or the daughter card will not fit properly.

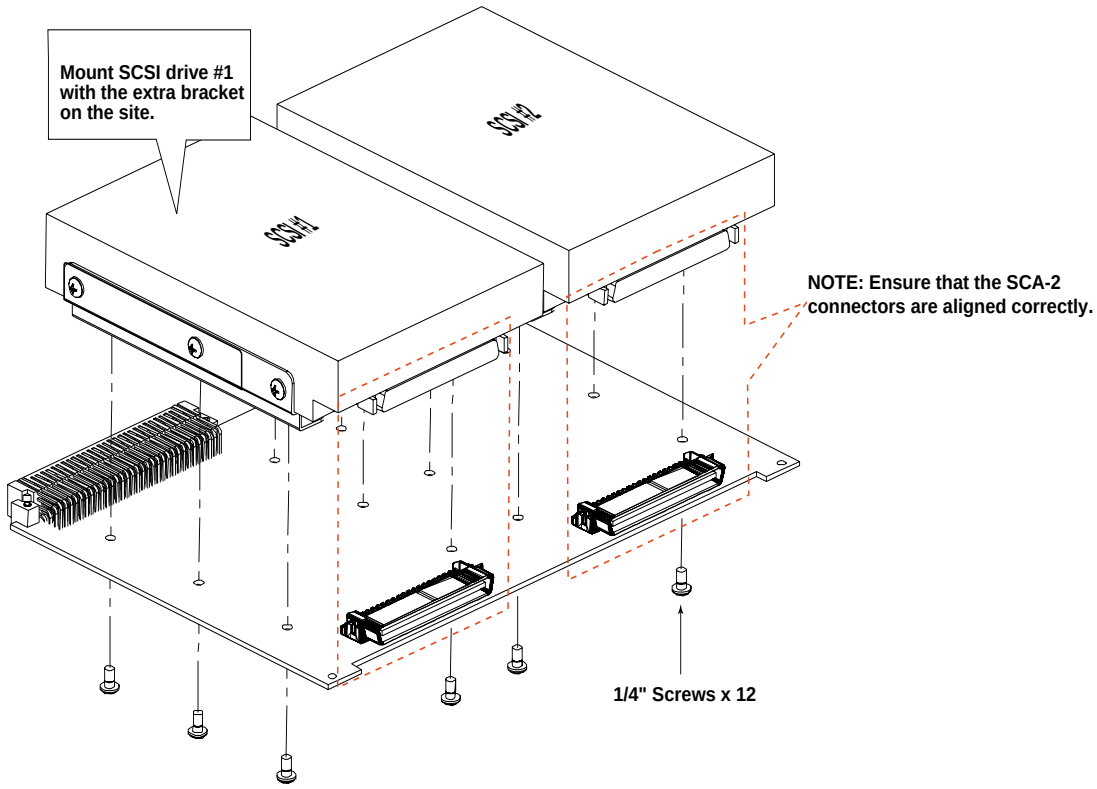


Figure 1-9 Mating the SCSI Drives to the Carrier

CAUTION: When installing the hard drives on the carrier, ensure that the SCA-2 connectors on both the hard drives and the carrier are aligned correctly or the daughter card will not fit properly. If the drives do not boot, ensure that the daughter card and the mating connectors for the carrier and hard drives are completely mated. Also, care should be taken when connecting the hard drives to the daughter card. Excessive force will damage the daughter card.

5. After the bracket installation, mate the hard drive and carrier to the daughter card SCA-2 connectors. Use one hand to hold the daughter card while gently mating the hard drive and carrier connectors to the daughter card SCA-2 connectors, ensuring that the connectors are completely mated together. See Figure 1-11 on page 20 or Figure 1-12 on page 20.

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6. The Ultra320 SCSI Hard drives connect to the VMIVME-5740 motherboard through a daughter card (VMIC P / N 332-000499-001). The Ultra320 SCSI hard drive connections are established using two 80-pin SCA-2 connectors (AMP P / N 2-557103-1). See diagram below for daughter card.

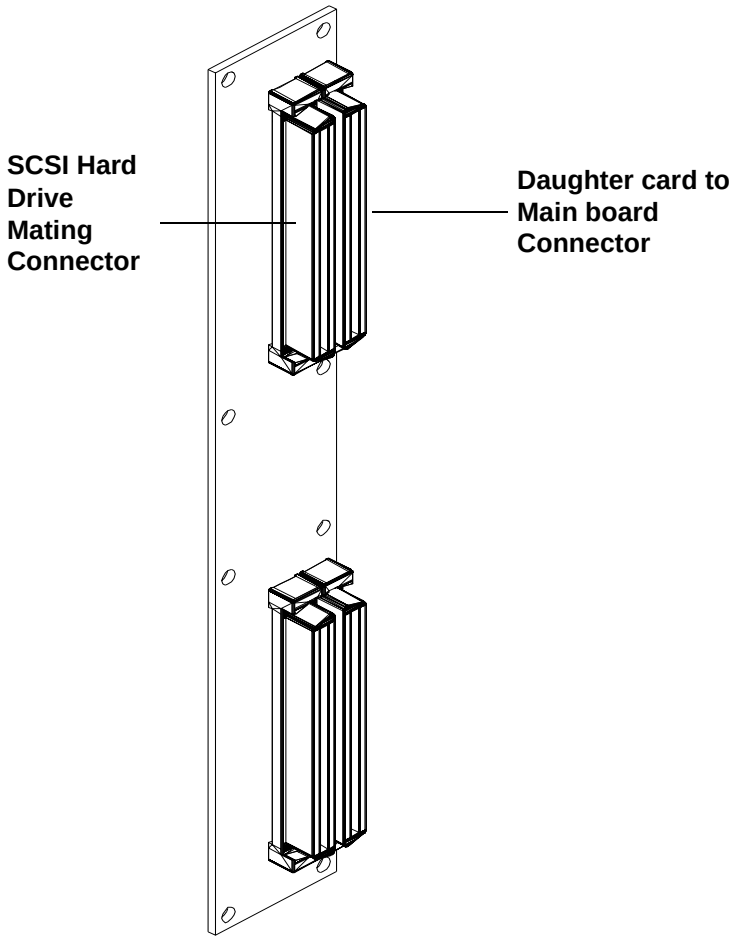


Figure 1-10 VMIVME-5740 Daughter Card

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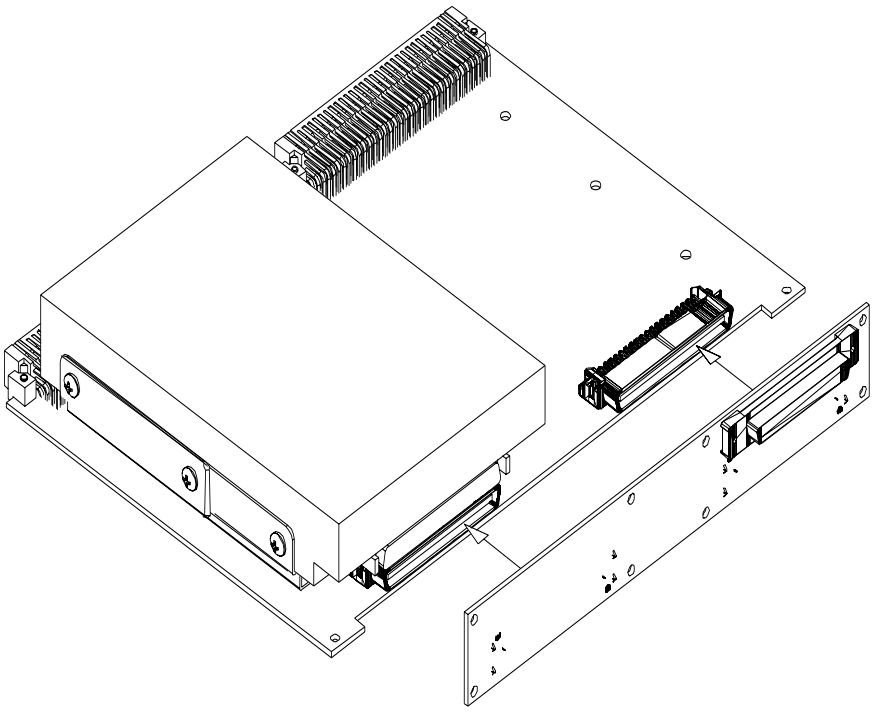


Figure 1-11 Mating the Daughter Card to the Carrier and One Hard Drive

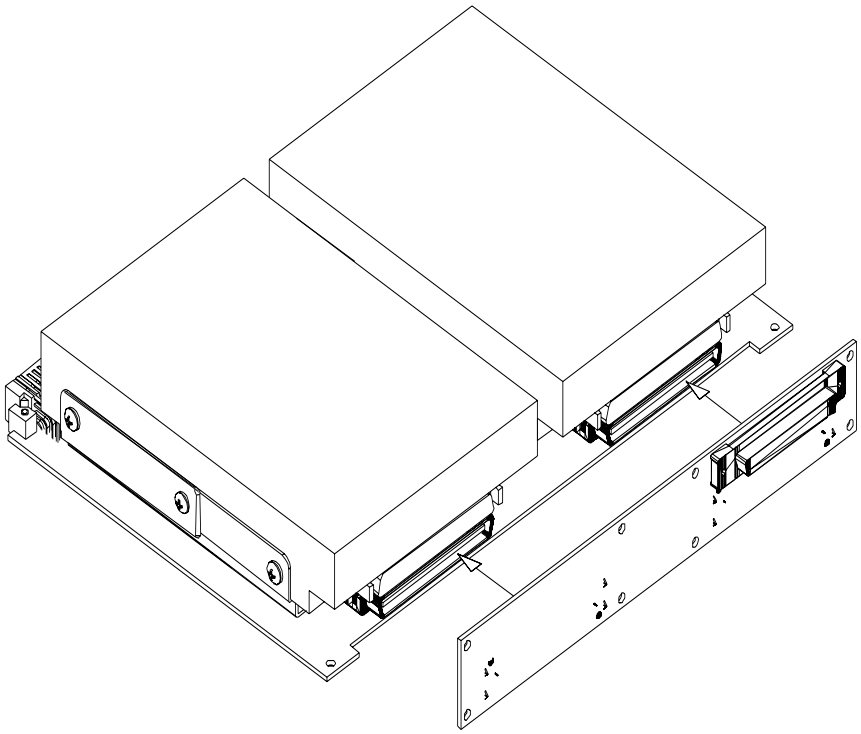


Figure 1-12 Mating the Daughter Card to the Carrier and Two Hard Drives

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7. Using the two screws and the two jack screws removed in step 1, secure the front panel to the board. Installation is complete (see Figure 1-13 below).

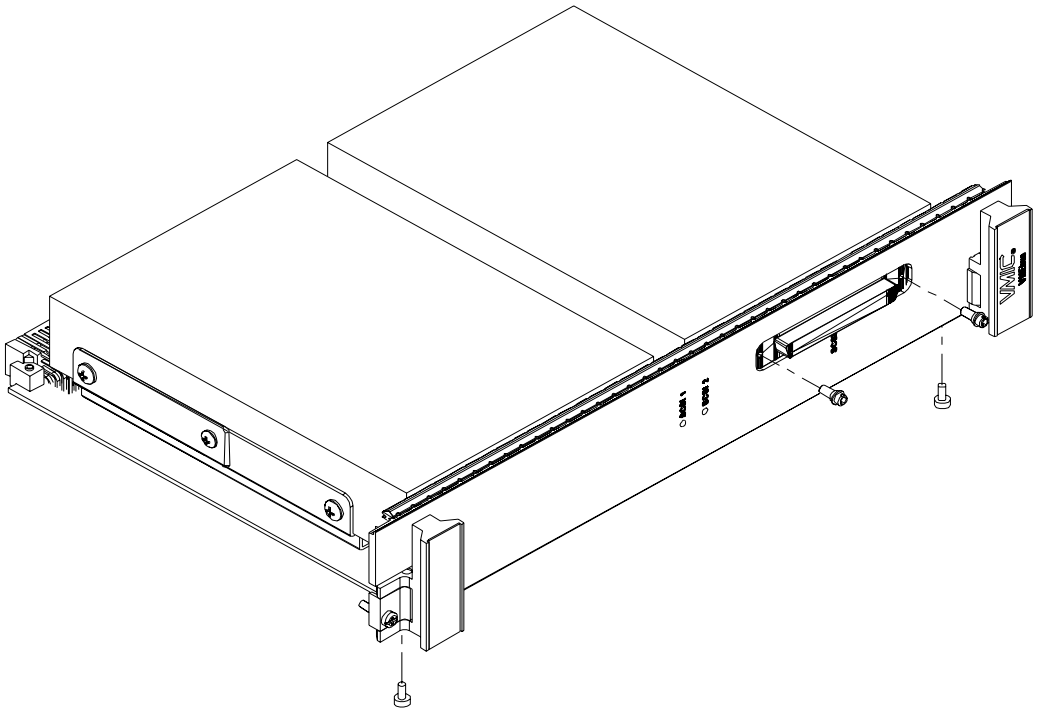


Figure 1-13 Installation of the Front Panel

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Connector Pinouts

VMEbus P1 Connector and Pinout

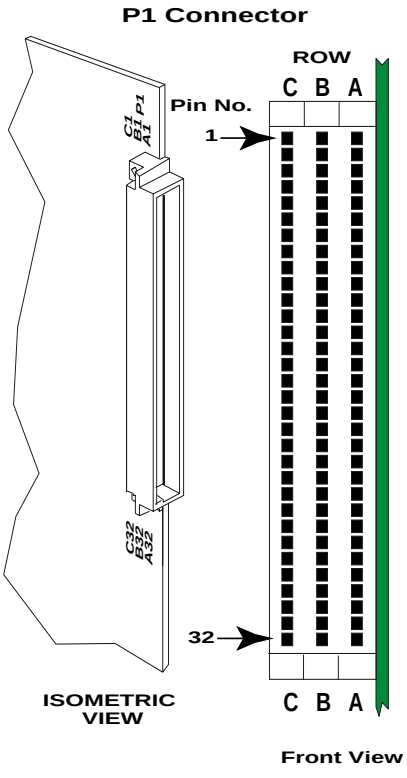


Figure 1-14 VMEbus P1 Connector

Table 1-4 VMEbus P1 Connector Pinout

Pin No.	Row A Signal	Row B Signal	Row C Signal
1	N/C	N/C	N/C
2	N/C	N/C	N/C
3	N/C	N/C	N/C
4	N/C	BG0IN	N/C
5	N/C	BG0OUT	N/C
6	N/C	BG1IN	N/C
7	N/C	BG1OUT	N/C
8	N/C	BG2IN	N/C
9	GND	BG2OUT	GND
10	N/C	BG3IN	N/C
11	GND	BG3OUT	N/C
12	N/C	N/C	N/C
13	N/C	N/C	N/C
14	N/C	N/C	N/C
15	GND	N/C	N/C
16	N/C	N/C	N/C
17	GND	N/C	N/C
18	N/C	N/C	N/C
19	GND	N/C	N/C
20	N/C	GND	N/C
21	IACKIN	N/C	N/C
22	IACKOUT	N/C	N/C
23	N/C	GND	N/C
24	N/C	N/C	N/C
25	N/C	N/C	N/C
26	N/C	N/C	N/C
27	GND	N/C	N/C
28	N/C	N/C	N/C
29	N/C	N/C	N/C
30	N/C	N/C	N/C
31	N/C	N/C	+12 V
32	+5 V	+5 V	+5 V

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VMEbus P2 Connector and Pinout

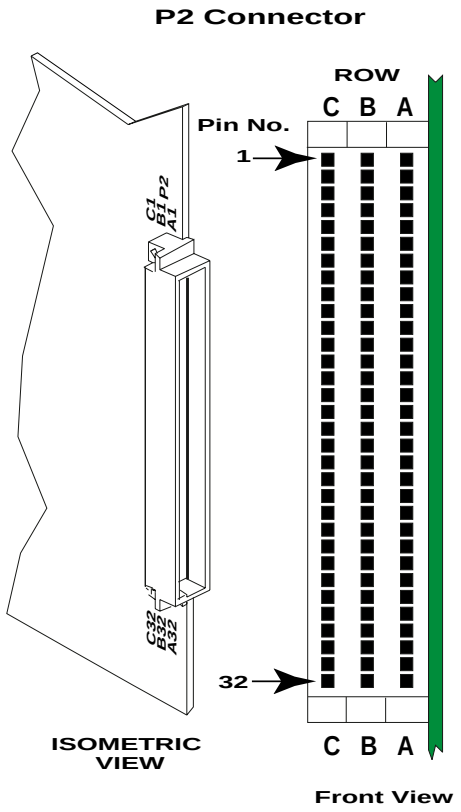


Figure 1-15 VMEbus P2 Connector

Table 1-5 VMEbus P2 Connector Pinout

Pin No.	Row A Signal	Row B Signal	Row C Signal
1	N / C	5.0 VCC	N / C
2	N / C	GND	N / C
3	N / C	N / C	N / C
4	N / C	N / C	N / C
5	N / C	N / C	N / C
6	N / C	N / C	N / C
7	N / C	N / C	N / C
8	N / C	N / C	N / C
9	N / C	N / C	N / C
10	N / C	N / C	N / C
11	N / C	N / C	N / C
12	N / C	GND	N / C
13	N / C	5.0 VCC	N / C
14	N / C	N / C	N / C
15	N / C	N / C	N / C
16	N / C	N / C	N / C
17	N / C	N / C	N / C
18	N / C	N / C	N / C
19	N / C	N / C	N / C
20	N / C	N / C	N / C
21	N / C	N / C	N / C
22	N / C	GND	N / C
23	N / C	N / C	N / C
24	N / C	N / C	N / C
25	N / C	N / C	N / C
26	N / C	N / C	N / C
27	N / C	N / C	N / C
28	N / C	N / C	N / C
29	N / C	N / C	N / C
30	N / C	N / C	N / C
31	N / C	GND	N / C
32	N / C	+5 V	N / C

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Maintenance

Maintenance

This section provides information relative to the care and maintenance of VMIC's products. If the product malfunctions, verify the following:

- Software
- System configuration
- Electrical connections
- Jumper or configuration options
- Boards are fully inserted into their proper connector location
- Connector pins are clean and free from contamination
- No components of adjacent boards are disturbed when inserting or removing the board from the chassis
- Quality of cables and I/O connections

If the product must be returned, contact VMIC for a Return Material Authorization (RMA) Number. **This RMA Number must be obtained prior to any return**.

Contact VMIC Customer Care at 1-800-240-7782, or
E-mail: support.embeddedsystems@gefanuc.com

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