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VX2-350-SC-CD

MASS STORAGE SUBSYSTEM

Technical Information

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PREFACE

A number of conventions are used throughout this manual in order to provide clarity and descriptive accuracy. These include:

1. The use of an 'H' (character) suffix to a number indicates that the number reference is in hexadecimal notation.

2. The use of a '-' (minus) postfix to a signal name indicates that the signal is either true when the signal is at a logic 0 level or that the signal initiates actions on a high-to-low signal transition.

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Chapter 1
Manual Organization and Introduction

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Scope

This chapter describes the organization of this manual and gives an overview of the VX2-350-SC-CD with the "**X**" in the model number referring to the particular P2 wiring of the module. A V**F**2-250-SC-CD has P2 wired for a Force type processor wiring scheme. A V**M**2-350-SC-CD has the P2 connector wired to accept the Motorola configuration of the P2 wiring.

Manual Organization

This manual is organized as follows:

Chapter 1 **MANUAL ORGANIZATION AND INTRODUCTION**
Contains an overview of the manual organization and provides a brief product description.

Chapter 2 **FEATURES AND SPECIFICATIONS**
Describes the product features, compatibility, and electrical specifications.

Chapter 3 **CONFIGURATION, INSTALLATION AND OPERATION**
Provides information on how to configure and install the VX2-350-SC-CD.

Chapter 4 **CD-ROM DRIVE DETAILS**
Contains specific details about the hard disk drive used on the VX2-350-SC-CD.

Chapter 5 **PRODUCT SUPPORT, SERVICE AND WARRANTY**
Describes what to do if you have trouble and how we will support you.

VX2-350-SC-CD Introduction

The VX2-350-SC-CD has been designed to provide a complete disk drive subsystem which is mechanically compatible with the VMEbus. It has been designed specifically to interface with VMEbus processors with an embedded SCSI Host Adapter. Together with the processor, a complete system can be installed in only three standard VMEbus system slots. The VX2-350-SC-CD provides a CDRom disk drive in a two slot module making it very convenient to have removable CDRom data storage. The drive used onboard the VX2-350-SC-CD was chosen for its compatibility, ruggedness and reliability.

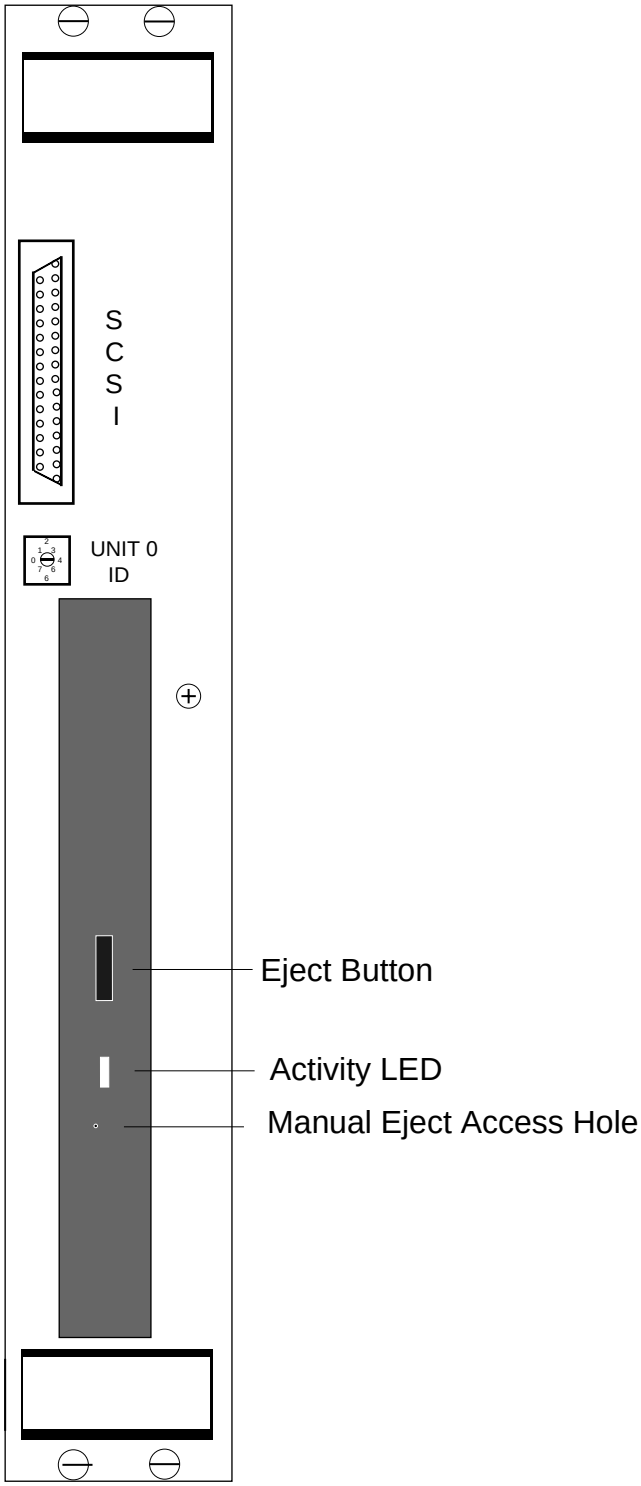


Figure 1-1: VX2-350-SC-CD Front Panel

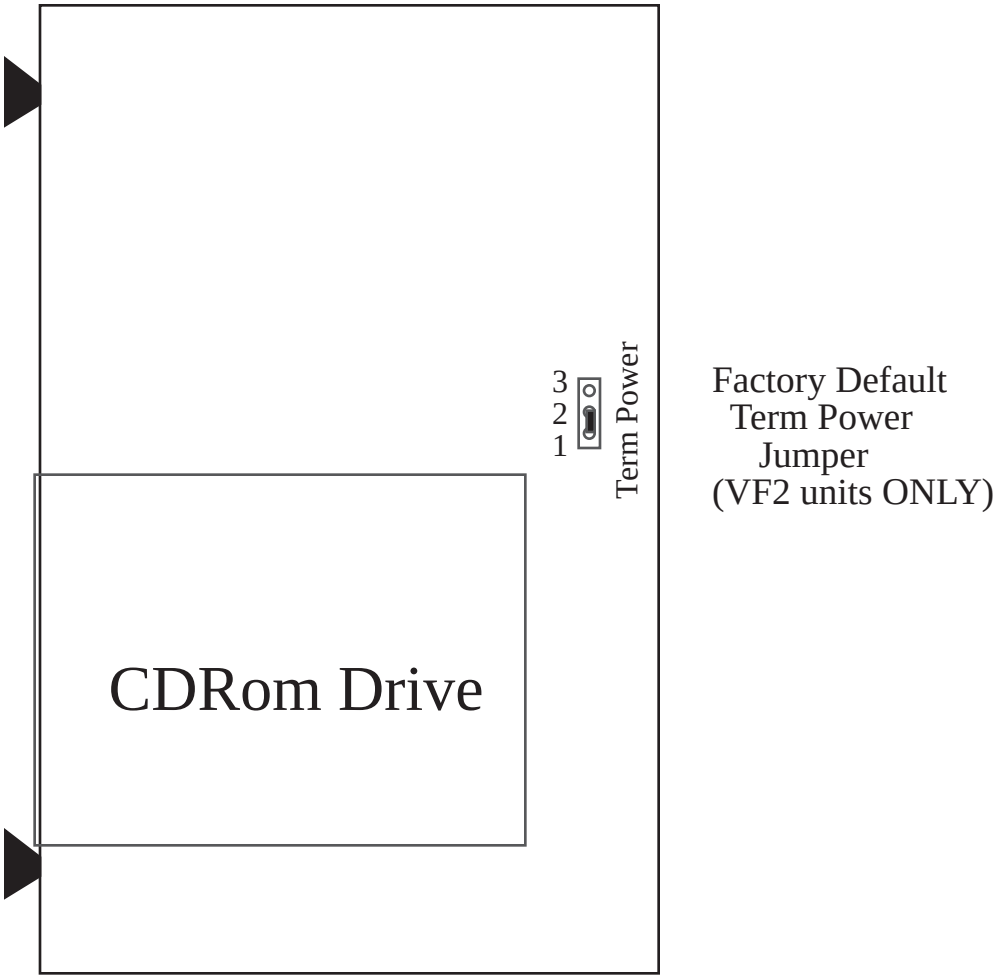


Figure 1-2: VX2-350-SC-CD Jumper Configuration

Chapter 2
Features and Specifications

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Scope

This chapter describes the overall features and specifications of the VX2-350-SC-CD.

Features

The VX2-350-SC-CD incorporates one very compact CDRom drive within a single module. The CDRom drive is high-performance and is used in conjunction with an Acard SCSI/ATAPI converter card for the drive control electronics. This controller is microprocessor controlled and compatible with ANSI X3.131-1986 SCSI commands. The CDRom drive is a very high performer, with an average track-to-track access time of 130 milliseconds or less. It incorporates an embedded at least 256 kilobytes of cache buffer which is operated in “look ahead” mode, providing buffering for sequential sector operations. The CDRom drive has been carefully packaged with suitable control cables and power distribution connectors for direct attachment to single board computers in the VME chassis.

SCSI Interface Description

In order to provide a method of embedding the disk drive control electronics, several disk drive manufacturers jointly defined an interface specification. This specification for the *Small Computer System Interface* has become known throughout the industry as “SCSI”. Basically, the SCSI interface consists of the required address, data and control signals from an SCSI Host Adapter. Since a goal of the specification is to allow the disk drive to be connected via standard cable, the specification required buffering of all signals so that the drive could be mounted a suitable distance from the board interface. This distance, however, is limited to eighteen feet. The specification provides all signals via a fifty-pin header connector for use with standard fifty conductor ribbon cable and connectors. Table 2-2 is a description of the SCSI-2 pin definition. The direction indicated is relative to the host.

Pin	Signal	Direction	Description
26	-DB (0)	In/Out	Bidirectional data line 0
27	-DB (1)	In/Out	Bidirectional data line 1
28	-DB (2)	In/Out	Bidirectional data line 2
29	-DB (3)	In/Out	Bidirectional data line 3
30	-DB (4)	In/Out	Bidirectional data line 4
31	-DB (5)	In/Out	Bidirectional data line 5
32	-DB (6)	In/Out	Bidirectional data line 6
33	-DB (7)	In/Out	Bidirectional data line 7
34	-DB (P)	In/Out	Parity
35	GND	-	Ground reference
36	GND	-	Ground reference
37	RESERVED	-	Reserved for future use
38	TERMPWR	-	Terminator Power
39	RESERVED	-	Reserved for future use
40	GND	-	Ground reference
41	-ATN	In/Out	Attention
42	GND	-	Ground reference
43	-BSY	In/Out	Busy
44	-ACK -	In	Acknowledge
45	-RST	In	Reset
46	-MSG	Out	Message
47	-SEL	In/Out	Select
48	-C/D	Out	Control/Data
49	-REQ	Out	Request
50	-I/O	Out	Input/Output

Table 2-2: SCSI Pin Definition

IN = From Host to Disk
OUT = From Disk to Host

NOTES:

(1) All pins 1-25 shall be connected to ground, except for pins 12 - 14. These pins should be left open. Some products designed prior to the generation of this standard connected these pins to ground.

(2) The minus sign next to the signals indicates active low.

VX2-350-SC-CD Specifications

The following table provides the specifications of the complete VX2-350-SC-CD. Individual disk drive specifications are given in their respective chapters.

General

Model:	VX2-350-SC-CD
Description:	CDRom drive module compatible with SCSI commands.
Interface:	Fast SCSI-2
Drive Type:	Teac CD-224. See Chapter 4 for drive details.
Hardware Compatibility:	VMEbus Double Eurocard (6Ux4HP)

Electrical

Power:	+5VDC 2.85A(max)

Physical

Size:	160mm x 234mm (Double Eurocard) 4HP (1 Standard Slot)
Construction:	Double-sided Printed Circuit

Environmental

Temperature:	0-55^{o} C Inlet Air (Operating) -20 to 60^{o} C (Non-operating)
Humidity:	8-80% RH, Non-condensing
Shock:	5G Max (Operating), 80G Max (Non-operating)

P2 Connector Pin Definitions

Force P2 Signal	Motorola P2 Signal	P2 Pin
-DB 0	-DB 0	A1
-DB 1	-DB 1	A2
-DB 2	-DB 2	A3
-DB 3	-DB 3	A4
-DB 4	-DB 4	A5
-DB 5	-DB 5	A6
-DB 6	-DB 6	A7
-DB 7	-DB 7	A8
-DPAR	-DPAR	A9
GROUND	-ATN	A10
GROUND	-BSY	A11
GROUND	-ACK	A12
TERM POWER	-RST	A13
GROUND	-MSG	A14
GROUND	-SEL	A15
-ATN	-C/D	A16
GROUND	-REQ	A17
-BSY	-IO	A18
-ACK		A19
-RST		A20
-MSG		A21
-SEL		A22
-C/D		A23
-REQ		A24
-IO		A25
GROUND	GROUND	A32

Table 2-3 P2 Pin Definitions

Chapter 3
Configuration, Installation, and Operation

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Scope

This chapter describes how to configure, install and operate the VX2-350-SC-CD mass storage subsystem module.

Drive Hardware Configuration

The drive on the VX2-350-SC-CD can be configured for normal operation as SCSI units 0-7 by setting the front panel switches with a small screwdriver.(**See Figure 1-1**) The particular configuration of the Unit ID's required depends upon the software and the application operating system.

CDRom Drive Hardware Configuration

The CDRom drive can be set so that it is activated by the SCSI unit 0-7, as is required to maintain compatibility with the SCSI software. The CDRom drive installed on the VX2-350-SC-CD utilizes the Fast SCSI-2 interface via the ADTX SCSI/ATAPI converter card. It is possible to connect another type of SCSI device via the interface cable and to connect 5 other units to the SCSI interface if needed. Please call Phoenix International Customer Support if you need assistance.

Considerations For Installation

There are several considerations before installing the VX2-350-SC-CD into your system.

VMEbus Slot Requirements

The VX2-350-SC-CD requires two slots in a standard VMEbus 6U card cage. Since the drive is mounted on an metal panel, this could potentially cause a shorting problem. If you are going to have a VMEbus card located in the next adjacent slot, you should carefully check it to make sure that no leads are likely to touch the VX2-350-SC-CD.

VMEbus Backplane Configuration

The VMEbus P1 connector supplies all operating power to the VX2-350-SC-CD and shunts the daisy-chain signals on the P1 connector. However, no other VME signals are connected on board. The VX2-350-SC-CD utilizes the User Defined Pins on the VMEbus P2 connector to route the SCSI interface signals to the Force/Motorola pin configuration.

Power Supply Requirements

Make sure that your VMEbus power supply has adequate capabilities to support the operation of the VX2-350-SC-CD when it is installed with all other cards in your VMEbus system. The specifications listed in Chapter 2 should be consulted for the maximum current requirements. Your power supply must be capable of providing sufficient current for the CDRom drive motor to spin up during initial operation (approximately 5 seconds).

Installing the VX2-350-SC-CD

Make sure that all power is removed from the backplane before inserting the boards. Prior to inserting the VX2-350-SC-CD into the card cage, it is necessary to verify the cable connections to the SCSI host/processor. Once you have connected and properly seated the associated cable assemblies, you should insert the host/processor into the VMEbus card cage. Now install the VX2-350-SC-CD into the VME chassis and mate the P1 connector properly. The P2 connector should also be aligned. Then connect the VX2-350-SC-CD to the SCSI host/processor with a 50 pin Micro-D cable or via the P2 connector on the backplane with the proper Phoenix International adapter module.

Drive Software Configuration

Initially you will need to run a device setup program in order to configure the software and hardware to properly recognize the drives on the VX2-350-SC-CD. You should consult the host/processor manual and/or operating system manuals for a description of the utility required to properly format and use your mass storage subsystem.

CDRom Drive Software Configuration

The CDRom drive can be installed as SCSI unit 0-7. The disk drive characteristics are described in detail in Chapter 4. It operates using the Fast SCSI-2 interface and has to be configured by the host operating system software for proper operation.

Terminator Power

Terminator power for the drives can be jumpered to route the Terminator Power from different sources. A jumper installed on pins **1-2** supplies power from the on board circuitry. A jumper installed on pins **2-3** supplies power from the P2 connector. Jumpers **Removed** allows the disk drives to supply their own Terminator Power if they are so configured.(**See Figure 1-2**)

Termination

The active termination required for the SCSI-2 bus is on the VX2 module. The SensiTerm™ circuitry will automatically configure the termination for the SCSI bus. It determines if the SCSI bus signals are received from the P2 connector or from the Micro-D connector on the front panel and sets the termination at the correct end of the SCSI bus. If the module is in the middle of a SCSI bus route, the SensiTerm™ circuitry automatically disables all on board termination.

Operation

Once the VX2-350-SC-CD has been configured properly and the software has been set up, operation is identical to that of a standard SCSI storage subsystem. No specialized software is required.

Chapter 5
Product Support, Service and Warranty

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Scope

This chapter describes Phoenix International's product support program. It states our product warranty and provides details about what to do if you have a problem with the product.

Warranty Statement

Phoenix International VMEbus products come with a "return-to-factory" warranty which covers defects in materials and workmanship for a period of seven years from the date of product shipment to the customer, provided the product is unmodified and has been subject to normal and proper use. Warranty on non-Phoenix International manufactured devices incorporated into Phoenix VMEbus products is restricted to that provided by their manufacturer only.

If You Have a Problem

If you are having a problem with a Phoenix International product, you should call our main number, (714) 283-4800, and ask for Customer Service. Please be prepared to supply as much detail as you can concerning the nature of the problem and the conditions in which the problem appeared.

Obtaining an RMA

In order to return the product for repair, the following steps are necessary:

1. Obtain a return materials authorization number (RMA#) from Phoenix International Customer Service.
2. Ship the product prepaid to the designated repair point.
3. Provide with the product a written description of the claimed defect.

Shipping the Product

Any product returned to Phoenix International should be in its original shipping carton if possible. Otherwise the product should be carefully packaged in a conductive packing material and placed in a cushioned corrugated carton suitable for shipping. Please mark the shipping label with the RMA number and return it to:

Phoenix International

812 W. Southern Avenue

Orange, CA., 92865

Attn: Customer Service Department

RMA #: _____

Providing a Product Defect Report

When you are returning a product for repair, it is very important to include a written report which details the nature of the problem in order to expedite the repair. Please make sure that the following information is included:

RMA # _____
Product: _____
Serial Number: _____
Contact: _____
Phone: _____

Description of the problem/defect:

Warranty Repairs

Any product returned and found to be under warranty will be repaired or replaced at the discretion of Phoenix International within five working days of receipt and shipped freight prepaid to the Customer.

Non-warranty Repairs

If a product is found not to be under warranty, we will notify you of the non-warranty situation and provide you with a fixed cost and a schedule for the repair. Non-warranty repairs require that a purchase order be issued to Phoenix International for the amount of the repair before repairs are undertaken.

Product Updates

In an effort to improve product performance and reliability, Phoenix International reserves the right to make product modifications provided they do not negatively impact either the performance or operation of previous versions. If a product update is for the purpose of correcting a design flaw, all customers shall be notified in writing as to the nature of the flaw and the requirements for the update.

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