

W3320-368/MQ AND W3320-368/MV SUBSYSTEM INTEGRATION MANUAL

This addendum to the QD33 Disk Controller Technical Manual is to be used ONLY with a W3320-368/MQ or a W3320-368/MV subsystem.



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AD0048-00
April 1987

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Printed in U.S.A.

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1.1 Introduction

The W3320-368/MQ and W3320-368/MV subsystems, distributed by Emulex, each contain a QD33 disk controller and at least one CDC 9720 SMD disk drive. This Integration Manual is designed to supplement the installation instructions in the Emulex QD33 manual and the CDC 9720 drive manual.

This manual is divided into two sections:

- **General Description (Section 1)** describes the W3320-368/MQ and W3320-368/MV subsystems.
- **Installation (Section 2)** describes the basic considerations for a W3320-368/MQ or W3320-368/MV subsystem installation.

1.2 Overview

The W3320-368/MQ and W3320-368/MV subsystems comprise an Emulex QD33 disk controller and at least one CDC 9720 disk drive. The QD33 is an MSCP-compatible controller and the CDC 9720 drive is a 368M byte (unformatted) SMD-0/SMD-E drive.

The W3320-368/MQ is compatible with DEC LSI-11/PDP-11 systems and the W3320-368/MV is compatible with DEC MicroVAX-11 systems.

1.3 Physical Description

The QD33 controller is contained on a single dual-wide printed circuit board assembly (PCBA) that plugs directly into an LSI-11 backplane slot. The QD33 supports up to two physical disk drives.

The CDC 9720 drive is an eight-inch module drive, which together with another CDC 9720, installs in a standard 19-inch rack mount cabinet.

1.4 Subsystem Models

The subsystem components and part numbers for W3320-368/MQ are listed in Table 1-1; the components and part numbers for W3320-368/MV are listed in Table 1-2.

Table 1-1. Subsystem W3320-368/MQ Components

Subsystem Component	Emulex P/N
QD33 Disk Controller CDC 9720(s) Cable Set for each drive, unshielded Control Cable (A), 25-ft Data Cable(s) (B), 25-ft Emulex PDP-11 Diagnostics Kit: Emulex LSI/PDP MSCP Formatter Program (QXMX8) and Manual W3320-368/X Subsystem Integration Manual QD33 Technical Manual	QD3310201 --- SU1111205 SU1111206 PX9951801-xx ¹ AD0048-00 QD33151001-00
1 Indicates media type. See QD33 Technical Manual, Appendix C.	

Table 1-2. W3320-368/MV Subsystem Components

Subsystem Component	Emulex P/N
QD33 Disk Controller CDC 9720(s) Cable Set for each drive, unshielded Control Cable (A), 25-ft Data Cable(s) (B), 25-ft Emulex MicroVAX Diagnostic Kit: MicroVAX MSCP Disk Formatter Program (FVD32M) and Manual W3320-368/X Subsystem Integration Manual QD33 Technical Manual	QD3310201 --- SU1111205 SU1111206 VX9951901-xx ¹ AD0048-00 QD3351001-00
1 Indicates media type. See QD33 Technical Manual, Appendix C.	

1.5 Related Documentation

Some or all of following documents are included with your subsystem:

- *QD33 Disk Controller Technical Manual, Part Number QD3351001-00*
- *Emulex LSI/PDP MSCP Disk Formatter (QXMX8) User's Guide, Part Number PX9950912-00*
- *VAX/MicroVAX MSCP Disk Formatter (FVD32M) User's Guide, Part Number VX9950918-00*
- *Emulex MicroVAX Monitor (uVM) User's Guide, Part Number VX9950910-00*
- *CDC Eight-Inch Module Drive PA8A2 Hardware Maintenance Manual, Volume 1, Part Number 83325410*

2.1 Overview

This installation section highlights the configuration information specific to the installation of an Emulex QD33 disk controller with a CDC 9720 disk drive. The information in this section supplements the installation information contained in the *QD33 Disk Controller Technical Manual(QD3351001-00)* and the *CDC Eight-Inch Module Drive PA8A2 Hardware Maintenance Manual, Volume 1(83325410)*.

This section is organized as follows:

Subsection	Description
2.2	QD33 Controller Configuration
2.3	CDC 9720 Drive Configuration

2.2 QD33 Controller Configuration

Refer to the *QD33 Disk Controller Technical Manual (QD3351001-00)* that you received with your subsystem to configure the QD33 controller for your application.

Set the switches and jumpers on the QD33 according to the controller manual.

Configure the QD33 NOVRAM by using either the console emulator technique (refer to section 6.5 in the QD33 Technical Manual) or the software program (section 2.3.1.3. in the FVD32M User's Guide or section 2.3.3.4 in the QXMX8_ User's Guide).

NOTE

If you have a two-drive subsystem, Emulex recommends enabling rotational position sensing (NOVRAM word 9) and setting switch SW3-9 OFF (index and sector signal source in the B cable).

2.3 CDC 9720 Drive Configuration

To configure the CDC 9720 drive to operate with the QD33 controller, Emulex recommends that you use the switch settings defined in this manual. The switches define drive options, sector size, unit address, etc. The switch packs are located either on the I/O board or the control board. Refer to Figure 3-16 in the CDC 9720 drive manual for an illustration of the boards and switch pack locations.

Use the default jumper settings listed in the CDC drive manual.

2.3.1 CDC 9720 Option Select Switches

The CDC 9720 Option Select Switches are located on the I/O board on switch packs A213 and A224. The switch packs may be accessed through an opening in the sheet metal on the same side of the drive as the cable connectors. Switch pack A213 is located near the top of the drive. The switch settings for switch pack A213 are defined in Table 2-1. Switch pack A224 is not used with the W3320-368/X subsystems.

Table 2-1. CDC 9720 Option Select Switches (A213)

Switch A213	Position	Description	
1	OFF	1A	Enable Channel 1 and send Index and Sector signal on both A and B cables. Must be set with SW2 OFF.
2	OFF	1B	See description for SW1.
3	ON	2D	Disables Channel 2. Must be set with SW4 ON.
4	ON	2D	See description for SW3.
5	OFF	READY	Ready status indicates drive up to speed, heads loaded, and no fault.
6	OFF	T2	Enables Extended Cylinder Address bits 2 ¹⁰ and 2 ¹¹ using Tag 2 (Head Select).
7	OFF	E	Drive operates in SMD-E mode.
8	OFF	XA	Enables Extended Cylinder Address (cylinders 0-1217).
9	OFF	--	Not used with single channel drive operation.
10	ON	R	Remote power-up.

2.3.2 Setting the Drive Unit Address

The QD33 supports up to two physical drives with physical unit addresses of 0 or 1. A CDC 9720 drive unit address may be set in one of two ways:

- Status/Control Panel (drive option)
- Control Board Switches E175-1 through E175-4

2.3.2.1 Status/Control Panel

If your drive has a Status/Control Panel, Emulex recommends setting the drive unit address using the panel. Refer to Figure 2-1 in the CDC 9720 drive manual for an illustration of the Status/Control Panel.

The address indicators are located above the address switch on the panel. There are four indicators, labeled 1, 2, 4, and 8. These numbers indicate the binary numbering system used for the drive unit address. Leaving your finger on the switch, continue to press the address switch until the indicators increment to display the physical drive unit number you have selected.

Note that the Status/Control Panel unit address switch overrides switches E175-1 through E175-4.

2.3.2.2 Control Board Switches E175-1 through E175-4

If your drive does not have a Status/Control panel, you must set the drive unit address using switches E175-1 through E175-4. Table 2-2 defines the positions for the Unit Address Switches, which are located on switch pack E175 on the control board. Note that the Status Panel overrides these switch settings.

Table 2-2. Unit Address Switches (E175-1 - E175-4)

Unit Address Number	E175-1	E175-2	E175-3	E175-4
0	ON	ON	ON	ON
1	OFF	ON	ON	ON

2.3.3 Normal Operation vs. Write Protect

Normal Operation vs. Write Protect for a CDC 9720 drive may be set in one of two ways:

- Status/Control Panel (drive option)
- Control Board Switch E175-6

2.3.3.1 Status/Control Panel

If your drive has a Status/Control Panel, Emulex recommends setting Normal Operation vs. Write Protect using the panel. Refer to Figure 2-1 in the CDC 9720 drive manual for an illustration of the Status/Control Panel.

To set the drive for normal operation using the Status/Control Panel, press the "Write Protect" switch on the panel so that the indicator, which is located on the switch, is OFF. (The write protect vs. normal operation switch operates as a toggle switch.)

Note that the Status/Control Panel Write Protect vs. Normal Operation switch overrides switch E175-6.

2.3.3.2 Control Board Switch E175-6

If your drive does not have a Status/Control Panel, you must set the drive for normal operation using switch E175-6. Table 2-3 defines the switch setting for Write Protect vs. Normal Operation using switch E175-6, which is located on the control board. Note that the Status Panel overrides this switch setting.

Table 2-3. Write Protect/Normal Switch E175-6

Switch	Position	Description
E175-6	ON	Normal Operation

2.3.4 Setting Sector Switches

The W3320-368/X subsystems operate with a sector size of 52 sectors per track and 255 bytes per sector. The drive sector clock must be set at 806 KHz. To set the sector size on the CDC 9720 drive, you must:

- Set the sector clock using switch E175-5
- Set the number of sectors per track using switch packs E875 and F575

Switch packs E175, E875, and F575 are all located on the control board.

2.3.4.1 Sector Clock

Table 2-4 lists the switch setting for switch E175-5, which defines the sector clock. You **must** set the sector clock to 806 KHz to operate with the UD33 controller.

Table 2-4. Sector Clock Switch E175-5

Switch	Position	Description
E175-5	OFF	806 KHz Sector Clock

2.3.4.2 Sector Size

Table 2-5 lists the switch settings for switch packs E875 and F575, which define the number of sectors per track. You **must** use these switch settings to select 52 sectors per track with 255 bytes per sector.

Table 2-5. Sector Size Switches E875 and F575

Switch	Position
E875	
1	ON
2	ON
3	ON
4	ON
5	ON
6	ON
F575	
1	ON
2	ON
3	OFF
4	OFF
5	OFF
6	OFF