

DECpc 1050-MB SCSI Hard Disk Drive

Installation Guide

Order Number: EK-XARAF-IA. A01

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Package Contents

The 1050-MB hard disk drive kit contains the following:

Item	Order Number
Disk drive	RZ26_E
Expansion brackets	74-44337-01
Screws (4), #6-32 × 3/16-inch	90-08020-01
Screws (4), #6-32 × 1/4-inch	90-00038-19
<i>DECpc 1050-MB SCSI Hard Disk Drive Installation Guide</i>	EK-XARAF-IA-A01

Before You Start

Read the following installation instructions. If you are unsure about your ability to configure and install the drive, you can contact Digital Services to hire a Digital Services technician to install the drive for you.

If you are replacing a drive, or adding a second drive, always back up the data before starting the installation.

SCSI Adapter Requirement

You must have a SCSI adapter in your computer before you install the 1050-MB hard disk drive. A SCSI adapter is present if the computer has a 50-pin cable that connects to the SCSI socket on the drive.

Installation Process Overview

The following overview describes the installation process:

1. Remove the system box cover and locate where you need to install the drive. See your computer user guide for removal directions.
2. Verify that you have a SCSI adapter in your computer. See "SCSI Adapter Requirements".
3. Configure the SCSI drive address or ID number. See, "Set the Drive ID Number."

Caution

Static electricity can destroy the circuits on the drive's circuit board. Discharge static electricity by touching the drive's metal frame before touching the circuit board.

4. Configure the drive to start and stop either on command or automatically. See "Setting the Spin Up Option".
5. If you have more than one drive and want to synchronize the drives, see "Setting the Spindle Synchronization Jumpers", otherwise go to step 6.
6. Determine if the drive requires a SCSI terminator. See, "SCSI Bus Termination."
7. Install the drive. See, "Drive Installation."

Setting the Drive ID Number

The SCSI bus on your SCSI adapter can connect up to seven disk, tape, CD-ROM, or other SCSI devices. Each of these devices must have a unique SCSI ID number. The procedure for setting the ID number:

1. Determine if you have other SCSI devices connected to your SCSI adapter. Your computer's SCSI devices can be located both internally connected to the SCSI ribbon cable and externally connected to the adapter board at the back panel of the computer.
2. Determine if you have more than two hard drives, including the 1050MB, which you are installing.

Note

The MS-DOS operating system and the SCSI adapter BIOS program normally controls up to two hard disk drives.

If you have more than two hard disk drives you will need to install a SCSI device driver. See the SCSI adapter user guide for device driver information.

If you have only two hard disk drives, including the 1050MB, the SCSI device drivers is unnecessary. Proceed to the next step.

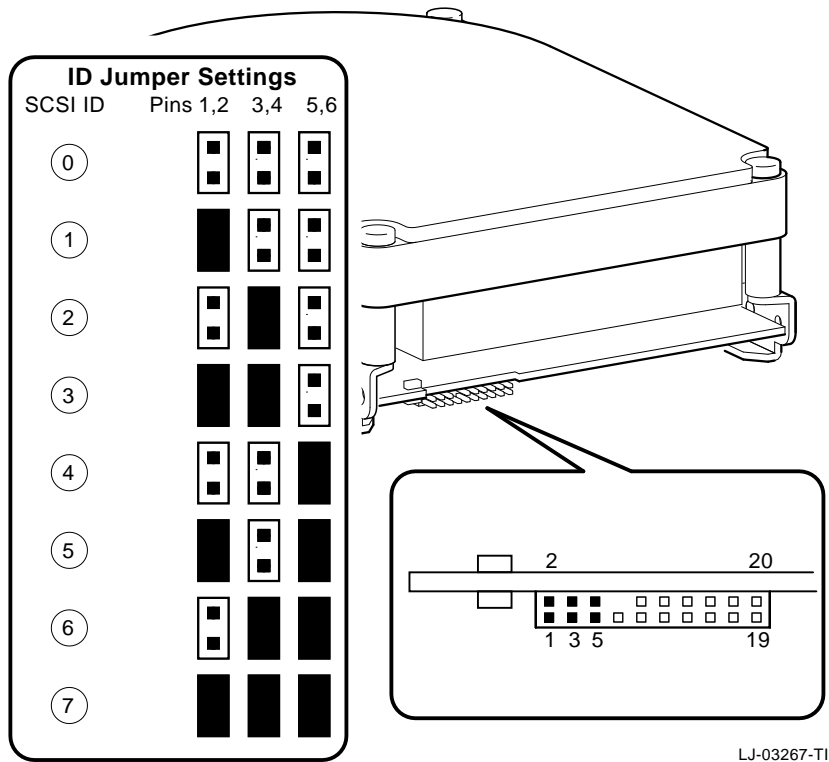
3. Set the ID number by plugging the plastic jumpers onto the appropriate connector pin or pins.

Three pairs of pins on the option connector set the drive's SCSI bus ID (Figure 1). Typically, the first drive on the SCSI bus is assigned address 0, the second drive address 1, and so on.

The following table gives the jumper settings for SCSI drive IDs. See Figure 1 for more specific setting information.

If your drive is the...	Then set the SCSI ID to...	Jumper Setting
Only SCSI drive	0	No jumper required
The second SCSI drive	1	Pins 1-2
Two or more drives	Set 1050-MB drive to an ID not used by one of the other SCSI devices.	

Figure 1 SCSI Bus Address Selection



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Setting the Spin Up Option Jumpers

You can initiate (spin up) and stop the drive on command or configure the drive to spin up automatically when power is on. Figure 2 shows the spin up jumper settings

If you want the drive to spin up...	Then set the pin 13-14 jumpers as follows:
With the START STOP UNIT command	Open/parked
Automatically when you apply power	Jumpered

The drive spins down when power is off, when it detects a fault condition, and in response to a START STOP UNIT command.

Figure 2 Option Connector Jumpers

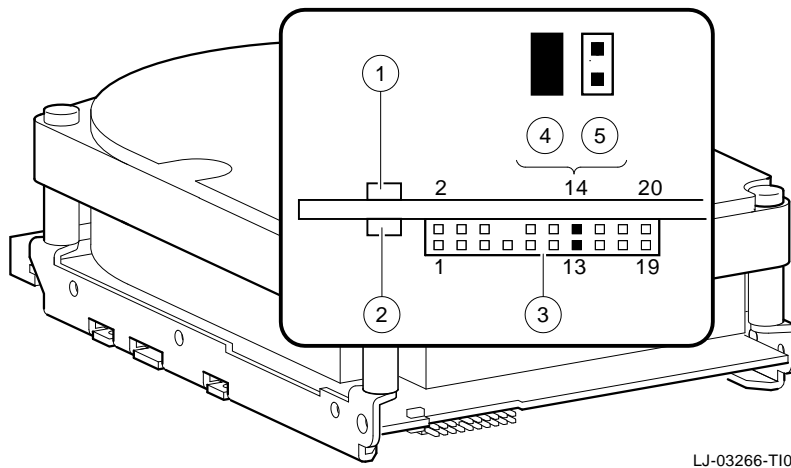


Table 1 describes the spin up option jumper settings and the location of the drives LED indicators.

Table 1 Spin Up Option Jumper Descriptions

Figure Legend	Description
1	Fault LED indicator (amber) Indicates a drive fault condition.
2	Busy LED indicator (green) Indicates drive is working on a SCSI command.
3	Option connector
4	Pins 13-14, jumpered Drive spins up automatically when power is on.
5	Pins 13-14, open/parked Drive spins up with START STOP UNIT command.

Setting the Spindle Synchronization Jumpers

Note

The optional spindle synchronization jumper setting applies only to configurations with more than one compatible SCSI drive.

Synchronization, useful in disk array applications, allows each disk to access simultaneously the same sector and byte of data. Use jumper pin 19 of the option connector to configure the drive for optional spindle synchronization. See Figure 2.

The drive operates as a master generating a reference signal on pin 19, or as a slave receiving a reference signal from another drive on pin 19. Master and slave modes are set through SCSI ID configuration.

The drive maintains local bus speed regulation when the drive synchronization option is not used.

SCSI Bus Termination

Devices connected to the SCSI bus must be terminated to work correctly and to prevent damage to the SCSI controller module. There must be no more than two terminators in a SCSI chain, one at the start of the chain (controller module) and one at the end of the chain.

Termination of the drive depends on the following two factors:

- Number of SCSI devices on the bus.
- Location of the drive in the SCSI chain.

The remainder of this section describes how to install the 1050MB drive.

Setting SCSI Device Termination

You can terminate the drive by using either the SCSI terminator located at the end of the SCSI ribbon cable or by using the terminator resistor packs supplied with your drive.

The following table describes the correct terminator placement within a SCSI chain.

Drives	Termination
One device	Add a terminator on that device.
One of the devices in the chain contains a terminator	Move that device to the end of the chain and do not add a terminator.
Two of the devices in the chain contain a terminator	Place one device at the end of the chain. Remove the terminator from the other device.

Installing Terminator Resistor Packs

Install the terminator resistor packs only if the following conditions exist:

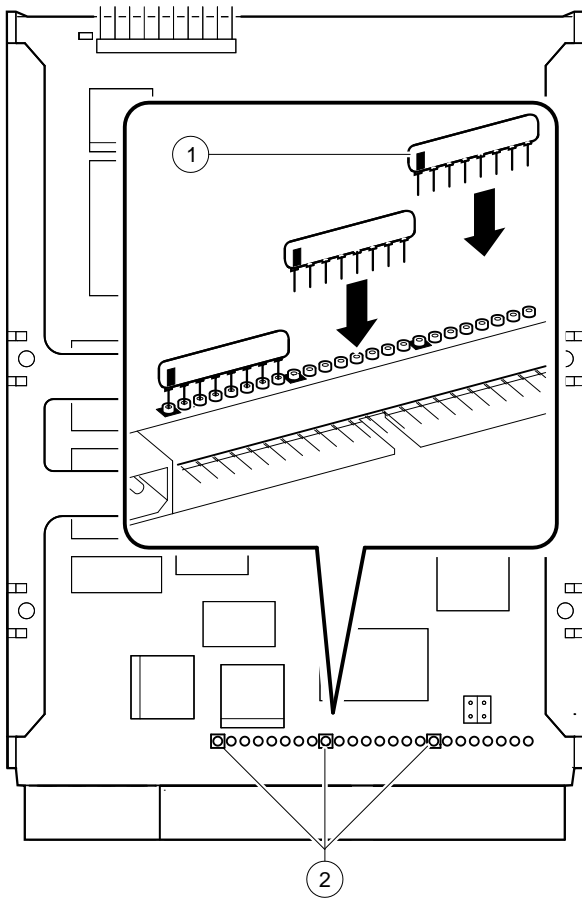
- Drive is located at the end of the SCSI bus.
- No terminator is located at the end of the SCSI ribbon cable.

The drive can provide termination power to its terminator resistor packs (if installed) and/or to the SCSI bus.

Install the three terminator resistor packs as follows:

1. Align the colored vertical bar on the terminator resistor pack with pin one on the drive. (Figure 3, Table 2).
2. Press the resistor pack into the pins on the drive.

Figure 3 Installing Terminator Resistor Pack



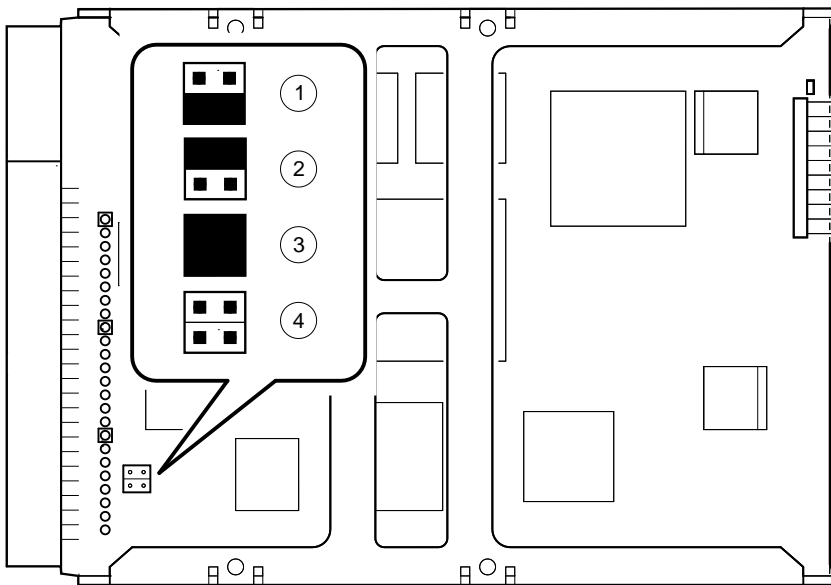
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Table 2 Terminator Resistor Pack Installation Description

Figure Legend	Description
1	Vertical bar (pin 1) on terminator resistor pack
2	Pin 1 locations on drive

Figure 4 and Table 3 describe each terminator power configuration jumper setting. In all cases the terminator Resistor packs are installed.

Figure 4 Terminator Power Jumper Settings



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Table 3 Terminator Power Jumper Description

Figure Legend	Terminator Resistor Packs
1	Drive provides termination power to its terminator resistor packs.
2	SCSI bus provides termination power to the drive's terminator resistor packs.
3	Drive provides termination power to its terminator resistor packs and the SCSI bus.

(continued on next page)

Table 3 (Cont.) Terminator Power Jumper Description

Figure Legend	Terminator Resistor Packs
4	No drive power supplied to SCSI TERMPWR. No power provided to drive's terminator resistor packs.

Installing the Drive

Perform the following steps to install the drive:

Note

Do not remove the chassis from the drive during these procedures. Doing so may subject the drive's precision internal assemblies to unnecessary mechanical shock and adversely affect critical alignments

1. Set the correct drive SCSI address and optional operating jumper settings. See, "Drive Configuration."

Note

Depending on the layout of your computer, you may find it easier to connect the cables (described in step 3) before you mount the drive in the bay.

2. Are you mounting the drive in a 5¼-inch bay?

If yes, attach the expansion brackets to the drive chassis using four 3/16-inch screws, included with the drive kit.

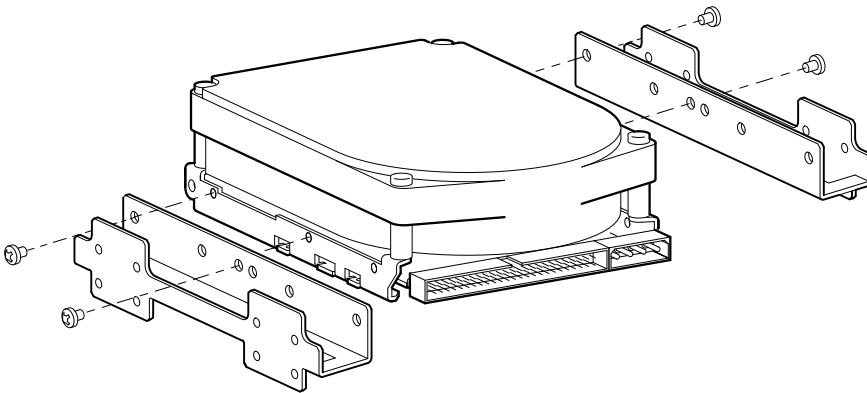
- a. Secure the brackets to the drive using the appropriate screw location (Figure 5).
- b. Some computers require you to install drive rails. If so, attach the drive rails supplied with your computer to the expansion brackets.

Caution

Use the short (3/16-inch) screws to mount the brackets to the drive. The longer screws will extend into the circuit board and damage the

drive. Use the longer screws to attach the drive rails to the expansion brackets, or to mount the brackets to the computer case.

Figure 5 Attaching Expansion Brackets



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If no, proceed to the next step.

3. Mount the Drive

Mount the drive in any position. Allow at least 0.050 inches of clearance from adjacent surfaces and sufficient slack in all cables, to provide adequate room for any drive movement on its shock mounts. Route cables carefully to prevent any chaffing of the cable insulation.

- a. Position the completed unit in the drive bay and choose the chassis mounting holes that match your bay's mounting locations.
 - b. Insert and secure the screws at the selected locations.
- 4. Connect the SCSI cable and 4-pin DC power cable (Figure 6, Table 4).**

Figure 6 Connecting Cables

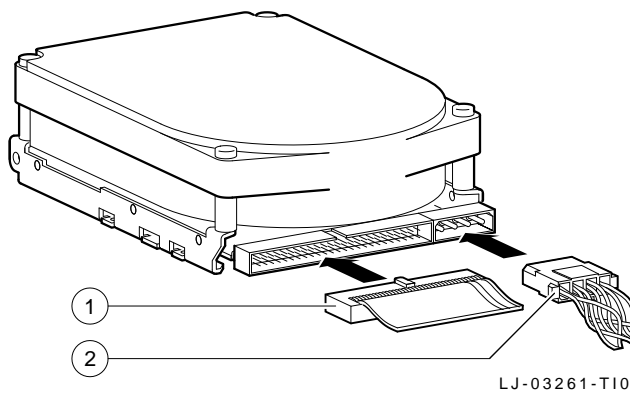


Table 4 Cable Description

Figure Legend	Description
1	SCSI ribbon cable (colored right edge to align with pin 1.)
2	4-Pin power cable.

Note

Most cables are keyed to allow only the correct connection. If the cable is not keyed, the colored edge of the cable must be on the right side in order to connect to pin 1 of the drive's SCSI interface connector.

5. Are you using the SCSI hard disk drive as the boot drive ?

If yes, run the appropriate Setup utility.

- Ensure that both Hard Drive 1 and Hard Drive 2 parameters are set to "Not Installed".
- Ensure that the IDE Drive parameter is set to "Disabled".

If no, leave the IDE Drive parameter setting. The SCSI hard drive becomes the next available letter drive after the IDE drive or drives

See your computer user guide for additional configuration instructions.

6. Do you have more than two SCSI hard drives ?

If yes, Install the appropriate SCSI device driver.

See your SCSI adapter manual for device driver information and installation instructions.

If no, proceed to the next step.

The SCSI adapter program controls automatically two SCSI hard drives without installing a device driver.

7. Reboot your computer. If the operating system is not installed, boot the system with the operating system installation diskette. See the operating system information for further instructions.

8. Partition and format the drive (if applicable)

- * FDISK to partition the drive.

- * FORMAT to prepare each partition to receive MS-DOS files.

- * FORMAT C:/S to copy the operating system to the primary DOS partition (master drive partitions only). See the MS-DOS user information for specific instructions.

9. Restore any backup files.

Specifications

Table 5 describes operational specifications:

Table 5 Operational Specifications

Characteristics	Specifications
Interface	SCSI_2
Capacity (formatted)	1050 MB
Rotational speed	5,363 RPM
Average seel time	9.5 ms
Bits per inch	56,000
Tracks per inch	2,756
Tracks per surface	2,570
Surface per drive	14
Sectors per track	57
Sector capacity	512-520 bytes
Transfer rate (to / from media)	2.6 MB/s
Transfer rate to bus (synchronous)	
Normal mode	5.0 MB/s
Fast mode	10.0 MB/s
Temperature	
Operating	0 C to 55 C
Nonoperating	-40 C to 65 C
Humidity	
Operating	8% to 85%
Nonoperating	5% to 95%

Power Requirements

Table 6 describes power requirements:

Table 6 Power Requirements

Characteristics		Specifications
Voltage regulation		+5 Vdc +- 5% +12 Vdc +- 5%
Ripple and noise		(+- 6% during spinup) +5 Vdc < 100 mv p-p +12 Vdc < 200 mv p-p
Current and power	Typical	Maximum
+5 Vdc Current	0.7 A	0.9A
+12 Vdc Current		
Spinup	2.3 A	2.6 A
Spinning with no seeks	0.6 A	0.7 A
Continuous random seeks	0.9 A	1.0 A
Total power	16.5 W	