



Data General Corporation, Westboro, Massachusetts 01580

Customer Documentation

Installing the Model 61024 3-1/2 Inch Disk Drive

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Installing the Model 61024 3-1/2 Inch Disk Drive 014-002641-01

Revision History:

Original Release – March 1997
First Revision – October 1997

A vertical bar in the margin of a page indicates substantive technical change from the previous revision.

NOTE

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. These limits are designed to provide reasonable protection against harmful 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 for help.

WARNING

This product complies with EN55022 Class B.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Testing was done with shielded cables. Therefore, in order to comply with the FCC regulations, you must use shielded cables with your installation.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe (B) prescrites dans la norme sur le matériel brouilleur : "Appareils Numériques", NMB-003 édictée par le ministre des Communications.

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Manufacturer's Declaration of Conformity

This equipment has been tested and found to comply with the requirements of European Community Council Directives 89/336/EEC and 73/23/EEC relating to electromagnetic compatibility and product safety respectively.



Preface

This manual explains how to install the Model 61024 disk drive. Before you begin, find the installing, expanding, or maintaining manual for the AViiON® computer in which you will install the drive. If you are installing the drive in a mass-storage subsystem, you will need the computer manual and a copy of the mass-storage subsystem's installation and maintaining manual. During the installation procedure, you must refer to the drive jumpering rules and drive mounting instructions contained in one or both of these manuals. This document assumes that you have experience installing mass-storage drives in a computer.

When you have finished installing the drive, we suggest that you place this document in the back of the binder that contains the manual for your computer.

Contacting Data General

Data General wants to assist you in any way it can to help you use its products. Please feel free to contact the company as outlined below.

Telephone assistance

If you are unable to solve a problem using any manual you received with your system, telephone support is available with your hardware warranty and with Support Plus and Hotline Software Support service contracts. If you are within the United States or Canada, contact the Data General Customer Support Center (CSC) by calling 1-800-DG-HELPS. Lines are open from 8:00 a.m. to 5:00 p.m., your time, Monday through Friday. The center will put you in touch with a member of Data General's telephone assistance staff who can answer your questions.

For telephone assistance outside the United States or Canada, ask your Data General sales representative for the appropriate telephone number.

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Data General's Customer Support Center (CSC) provides Internet users with access to a Service Request Menu, Electronic Search Program, a Bulletin Board, Monthly Newsletters, Weekly Bulletins, Maintenance Updates, patches, and important information on a variety of operating systems. An active support contract may be required for certain features.

Internet users can reach the CSC web server at <http://www.csc.dg.com>.

Avoiding electrostatic discharge (ESD) damage

The cover(s) and filler panel(s) installed on your equipment protect the electronic circuits inside the equipment from electrostatic discharge (ESD) damage. However, when you remove these covers and filler panels to replace or install subassemblies, you can inadvertently damage the sensitive electronic circuits in the equipment by simply touching them. Electrostatic charge that has accumulated on your body discharges through the circuits. If the air in the work area is very dry, running a humidifier in the work area will help decrease the risk of ESD damage. You must follow the procedures below to prevent damage to the equipment.

CAUTION *To prevent equipment damage, read and understand the following instructions before you remove the cover(s) or panel(s) from the equipment.*

- Provide enough room to work on the equipment. Clear the work site of any unnecessary materials or materials that naturally build up electrostatic charge, such as foam packaging, foam cups, cellophane wrappers, and similar materials.
- Do not remove replacement or upgrade subassemblies from their antistatic packaging until the exact moment that you are ready to install them.
- Gather the tools, manuals, an ESD kit, and all other materials you will need before you remove covers and panels from the equipment. Procedures for removing subassemblies usually list required materials at the beginning. After you remove a cover or panel, you should avoid moving away from the work site; otherwise, you may build up an electrostatic charge.
- Use an ESD kit when handling circuit boards or when touching the electronic circuits inside the equipment. If you don't have an ESD kit, you can order one from Data General. If an emergency arises and an ESD kit is not available, follow the procedures in the "Emergency procedures (without an ESD kit)" section.
- Replace the cover(s) or panel(s) on the equipment as soon as possible so that the electronic circuits are protected.
- If the equipment has an opening for an optional device (such as a mass-storage drive), and the device is not installed, make sure a filler panel is installed in the opening before connecting the equipment to the ac power outlet.

Emergency procedures (without an ESD kit)

In an *emergency* when an ESD kit is not available, use the following procedures to reduce the possibility of an electrostatic discharge by ensuring that your body and the subassembly are at the same electrostatic potential.

CAUTION *These procedures are not a substitute for the use of an ESD kit. Follow them only in the event of an emergency.*

- Before touching any electronic circuits or boards inside the equipment, firmly touch a bare (unpainted) metal surface of the equipment.
- Before removing any replacement or upgrade subassembly from its antistatic bag, place one hand firmly on an unpainted metal surface of the chassis, and at the same time, pick up the replacement or upgrade subassembly while it is still sealed in the antistatic bag. Once you have done this, *do not* move around the room or contact other furnishings, personnel, or surfaces until you have installed and *secured* the subassembly in the equipment.
- Remove the subassembly from the antistatic bag, handling printed circuit boards by the edges. Avoid touching components and circuits on a printed circuit board.
- If you must move around the room or touch other surfaces before securing the subassembly in the equipment, first place the subassembly back in the antistatic bag. When you are ready again to install the subassembly repeat these procedures.
- Order an ESD kit from Data General for the next time you need to add or remove a cover or panel.



Installing the drive

The Model 61024 is a 4-Gbyte, 3-1/2 inch, one-inch high disk drive. It has a 16-bit wide, single-ended interface and uses the single connector attachment (SCA-2) design (Figure 1). This single connector, which carries all SCSI signals and power signals, allows you to plug the drive directly into an AViiON® computer or mass-storage subsystem that supports the SCA design, without connecting cables. The drive supports both the SCSI-2 standard and SCSI-3 Fast-20 standard (also called UltraSCSI or Ultra).

IMPORTANT The SCSI host-bus adapter (HBA) in some AViiON computers does not support SCSI-3 Fast-20 operation mode. In order to operate in Fast-20 mode, your system may require a Fast-20 enable kit. For more information, read your computer's manual or contact Data General as described in the "Contacting Data General" section in the Preface.

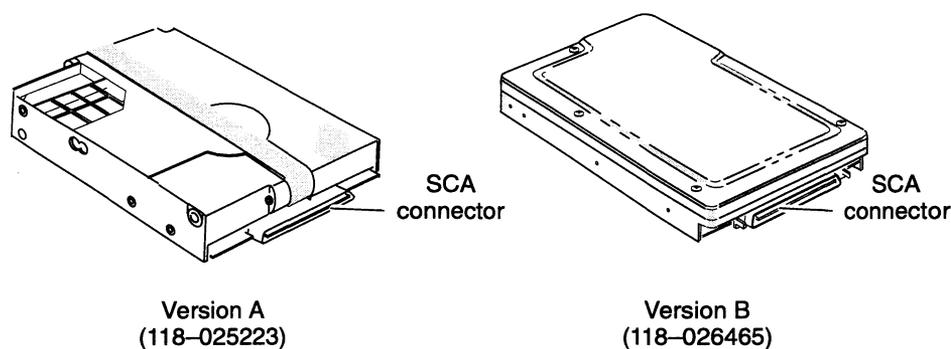


Figure 1 The Model 61024 disk drives, Versions A and B

The Model 61024 drive is manufactured for Data General in two different versions, A and B. Versions A and B are interchangeable so it does not matter which one you received. Also, with a few exceptions, the installation procedures for these drives are similar. You will need, however, to determine the version you have so that you can refer to the correct illustrations during the installation procedure. To identify the version of your drive, locate the label with the 118- part number printed on it. Version A is 118-025223, and Version B is 118-026465.

Table 1 highlights the specifications of each version of the Model 61024 drive. Refer to this information as needed.

Table 1 Specifications for the Model 61024 disk drive

Formatted Capacity (512 bytes/block)	4.35 Gbytes	
Interface Type	SCSI-2 16-bit wide, single-ended interface SCA connector system	
	Version A	Version B
Current (+5 V dc)		
Steady state (amps)	1.06	0.57
Surge (amps)	1.30	0.62
Current (+12 V dc)		
Steady state (amps)	0.49	0.35
Surge (amps)	1.71	1.50
Power Dissipation (W)		
+ 5 V dc	5.30	2.85
+12 V dc	5.88	4.20
Weight	.46 kg. (1.0 lbs)	.53 kg (1.2 lbs)

The environmental specifications for this drive meet or exceed those of the Data General computer or mass-storage subsystem that houses it. For a list of the environmental specifications, refer to your Data General AViiON computer or mass-storage subsystem installing manual.

Verifying system requirements

You can install the drive in an Intel-based AViiON computer that uses the SCA design and that has a SCSI host bus adapter supported by Data General. If you are not sure if your AViiON computer or host bus adapter supports the Model 61024 drive, contact Data General as described in the "Telephone assistance" section.

Data General has tested and supports this drive in AViiON systems running any of the following operating system releases or revisions:

- ▶ If your AViiON system is running the DG/UX® system, use DG/UX® System Release 4.11 with maintenance update mu03, supplement s01, and patch 58; or a later maintenance update or release.
- ▶ If your AViiON system is running the Windows NT® operating system, use Revision 3.51 with service pack sp5, Revision 4.0 with service pack sp1, or a later service pack or revision.
- ▶ If your AViiON system is running the SCO Unixware® operating system, use Revision 2.1 or a later revision.
- ▶ If your AViiON computer system is running an operating system other than the DG/UX system, Windows NT, or SCO Unixware, refer to your operating system's documentation to make sure your operating system's revision or release supports this drive. Or contact Data General as described in the "Telephone assistance" section in the Preface for additional information.

Read the next section to unpack and inspect the drive.

Unpacking, inspecting, and handling the drive

1. Read and follow the procedures described in the "Avoiding electrostatic discharge (esd) damage" section in the Preface to prevent damaging the drive.
2. Remove and set aside the packing slip from the outside of the shipping carton.
3. Before removing the drive from the carton read and understand the following precautions to avoid drive damage:

CAUTION *When not mounted in an enclosure, this high-density drive is extremely susceptible to damage caused by shock vibration. Even a slight drop, tap, or bump may damage it. When swapping a drive out of the computer system's enclosure, follow all of the applicable precautions listed below.*

- Make sure you have a firm grip on the drive before you lift it. Lift it with both hands without touching the drive's printed-circuit board.
 - When you inspect or work with the drive, never place it directly on a hard surface. Always place it on an anti-static mat placed over a 1-inch thick foam pad.
 - Never stand the drive on its side or it may tip over.
 - Never allow tools or other objects to bump the drive or its printed-circuit board.
 - Never use a tool to seat or force the drive into its carrier.
 - If you have several drives, handle one at a time. Never stack them or let them strike each other.
4. Carefully remove the drive from the carton and place it on a padded ESD mat.
 5. Inspect the drive for any visible damage. If the drive is damaged, contact Data General as described in the "Telephone assistance" section in the Preface.
 6. Make sure that the model or part number on the packing slip matches the one on the label attached to your drive.

If you think you received the wrong drive, contact Data General as described in the "Telephone assistance" section in the Preface.

7. Make sure that you have all necessary mounting brackets for the computer or mass-storage subsystem in which you intend to install this drive.

Refer to the installing or setting up manual for your computer. This manual describes any additional mounting brackets or slides that your computer may require. Keep this manual close by. It contains information that you will need to install the drive.

8. If you do not know if your drive is Version A or B, determine it by using the 118- part number on your drive. The part number for the Model 61024 drive is 118-025223 for Version A and 118-026465 for Version B. Then do one of the following:
 - ▶ If your drive is Version A, read the next section.
 - ▶ If your drive is Version B, skip to the section "Setting the drive's jumpers (Version B).

Setting the drive's jumpers (Version A)

What you do next depends on whether you are installing the drive in an AViiON computer or an AViiON 6966 mass-storage subsystem. If you are installing the drive in an AViiON computer, skip to step 4. If you are installing the drive in an AViiON 6966 mass-storage subsystem begin with the next step.

1. For an AViiON 6966 mass-storage subsystem, install a jumper on jumper-pin set 13 (Figure 2).

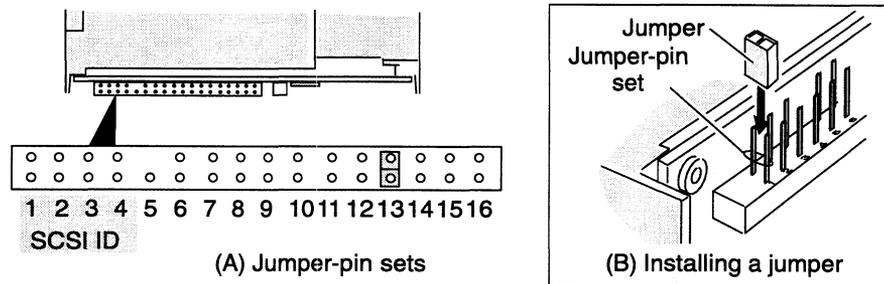


Figure 2 Jumper settings when the drive is installed in an AViiON 6966 mass-storage subsystem

2. Make sure no other jumpers are installed. The remaining jumper-pin sets do not require jumpers when you install the drive in an AViiON 6966 mass-storage subsystem.

IMPORTANT You do not need to install SCSI-ID jumpers on this drive. The drive's SCSI ID is set automatically when you install the drive in the AViiON 6966 mass-storage subsystem. For more information about hot-swappable drives, refer to the manual that came with your AViiON 6966 mass-storage subsystem.

3. You have jumpered the drive for installation in a AViiON 6966 mass-storage subsystem. Skip to step 6.
4. For an AViiON computer, install jumpers on jumper-pin sets 11 and 13 (Figure 3). This setting causes the drive to delay disk spin-up for a specific period.

$$\text{Period} = 10 \text{ seconds} \times \text{SCSI-ID number}$$

IMPORTANT Some AViiON systems are designed to intentionally override this jumper setting so that the drive waits for a start-unit command. Therefore, to make sure this drive operates properly, enable the start-unit command option for the drive's HBA. Also if the HBA has the SCSI-3 Fast-20 (Ultra) option and you want the drive to use it, make sure you enable it. See your HBA installation documentation or AViiON computer manual to find out how to enable these HBA options.

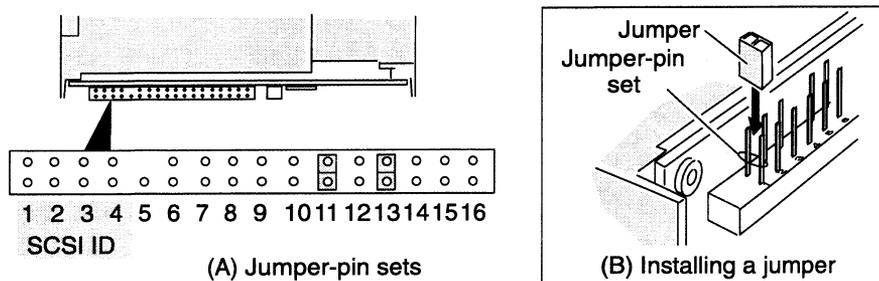
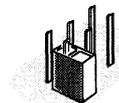


Figure 3 Jumper settings when the drive is installed in an AViiON computer

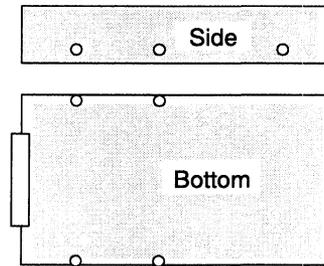
5. Make sure no other jumpers are installed. The remaining jumper-pin sets do not require jumpers when you install the drive in an AViiON computer.

IMPORTANT You do not need to install SCSI-ID jumpers on this drive. The drive's SCSI ID is set automatically when you install the drive in the AViiON computer. For more information about hot-swappable drives, refer to the manual that came with your AViiON computer system.

6. If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration. You may need them in the future.



7. Figure 4 shows the side and bottom mounting screw holes. Refer to the computer's installing, expanding, or maintaining manual. Follow the instructions there to attach any required mounting brackets, drive carriers, spacers, or fasteners, and to finish installing the drive in the computer.



(10) 6-32 UNC mounting screw holes

Figure 4 Mounting screw holes for the Version A drive

CAUTION

To avoid disk-drive damage, attach the drive using the mounting hardware that we provided. If you must use other hardware when installing the drive, make sure the screws you use do not penetrate more than 3.8 mm (.149 in) into the drive's mounting screw holes.

Setting the drive's jumpers (Version B)

What you do next depends on whether you are installing the drive in an AViiON computer or an AViiON 6966 mass-storage subsystem. If you are installing the drive in an AViiON computer, skip to step 4. If you are installing the drive in an AViiON 6966 mass-storage subsystem begin with the next step.

1. For an AViiON 6966 mass-storage subsystem, install a jumper on jumper-pin set 11 (Figure 5).

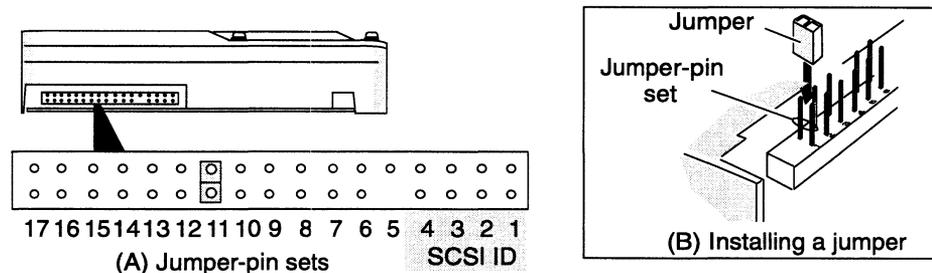


Figure 5 Jumper settings when the drive is installed in an AViiON 6966 mass-storage subsystem

2. Make sure no other jumpers are installed (Figure 5). The remaining jumper-pin sets do not require jumpers when you install the drive in an AViiON 6966 mass-storage subsystem.

IMPORTANT You do not need to install SCSI-ID jumpers on this drive. The drive's SCSI ID is set automatically when you install the drive in the AViiON 6966 mass-storage subsystem. For more information about hot-swappable drives, refer to the manual that came with your AViiON 6966 mass-storage subsystem.

3. You have jumpered the drive for installation in a mass-storage subsystem. Skip to step 6.
4. For an AViiON computer, install jumpers on jumper-pin sets 8 and 11 (Figure 6). This setting causes the drive to delay disk spin-up for a specific period.

$$\text{Period} = 4 \text{ seconds} \times \text{SCSI-ID number}$$

IMPORTANT Some AViiON systems are designed to intentionally override this jumper setting so that the drive waits for a start-unit command. Therefore, to make sure this drive operates properly, enable the start-unit command option for the drive's HBA. Also if the HBA has the SCSI-3 Fast-20 (Ultra) option and you want the drive to use it, make sure you enable it. See your HBA installation documentation or AViiON computer manual to find out how to enable these HBA options.

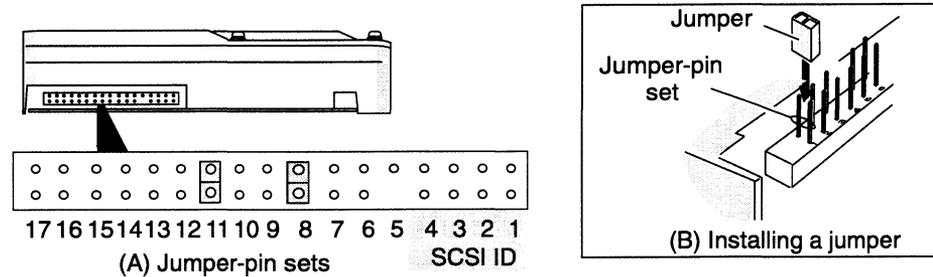
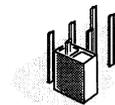


Figure 6 Jumper settings when the drive is installed in an AViiON computer

5. Make sure no other jumpers are installed (Figure 5). The remaining jumper-pin sets do not require jumpers when you install the drive in an AViiON computer or mass-storage subsystem.

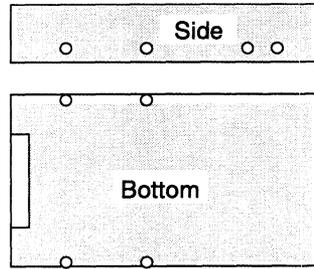
IMPORTANT You do not need to install SCSI-ID jumpers on this drive. The drive's SCSI ID is set automatically when you install the drive in the AViiON computer. For more information about hot-swappable drives, refer to the manual that came with your AViiON computer system.

6. If you have extra jumpers, store each on one pin of a jumper-pin set as shown in the illustration. You may need them in the future.



7. Figure 7 shows the side and bottom mounting screw holes. Refer to the computer's installing, expanding, or maintaining manual. Follow the instructions there to attach any required mounting brackets, drive carriers, spacers, or fasteners, and to finish installing the drive in the computer.

Setting the drive's jumpers (Version B)



(12) 6-32 UNC mounting screw holes

Figure 7 Mounting screw holes for the Version B drive

CAUTION

To avoid disk-drive damage, attach the drive using the mounting hardware that we provided. If you must use other hardware when installing the drive, make sure the screws you use do not penetrate more than 3.8 mm (.149 in) into the drive's mounting screw holes.

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