COMPAQ

RZ1DD 9.1GB and RZ1ED 18.2GB Disk Drive StorageWorks Building Blocks

StorageWorks
Product Notes

This Product Note contains the replacement considerations, disk specifications, and application notes for the RZ1DD and RZ2ED family of disk drive StorageWorks Building Blocks (SBBs).

Overview of StorageWorks Building Blocks

Thank you for purchasing one of our disk SBBs, designed and manufactured by Digital Equipment Corporation. This device is compatible with SCSI single-ended interface standards and has been certified and is supported on Alpha Windows NT, DIGITAL UNIX, DIGITAL OpenVMS, and all Intel–compatible Windows, Windows NT, and Novell Systems. It is also supported for use with HP9000 700/800 Series, IBM RS/6000, SGI IRIX, and Sun SPARC system platforms.

Specifications

Special features of note include:

- 10000 rpm; 6.8 ms average seek time

- Asynchronous and Synchronous data -transfer protocol

- Programmable sector size reallocation

- Tagged command queuing and multi-initiator support

- Staggered disk spin up

- Self diagnostics

- 5-year warranty

- UL, CSA, and VDE standards

The disk drive has been designed to be compatible with many data-storage applications and is ready to be used when attached to a qualified industry-standard SCSI adapter and corresponding driver software. The drive identifies itself when interrogated by the SCSI driver software.

The drive has a turn-on circuit that automatically spins up the drive after a delay period. The delay period is equal to the disk specific predetermined delay (see Table 5) times the SCSI ID of the drive; e.g., drive in SCSI ID**2** delays *2* times the predetermined delay before spin up; drive in SCSI ID**6** delays *6* times the predetermined delay before spin up, etc. This arrangement is required for operating systems that do not have a facility for motor spin up; it lets successive drives in an array automatically spin up following a staggered delay.

This sequence avoids excessive loading of the power supply. If your specific operating system is not compatible with this automatic "spin up" feature, please contact your supplier for instructions.

Some SCSI adapters provide options in the adapter set-up menu to allow automatic spin up of the disk drive motor. Although not required by the drive, the automatic spin up feature may be enabled, if other disk drive devices sharing the same SCSI adapter require it. SCSI adapters that have jumper or switch options to simultaneously spin up disk drive motors should not have that function enabled. The staggered spin up feature within the disk sequences power to the disk drive motors one at a time. This sequencing avoids out-of-specification surges of power supply current that, under extreme conditions, could cause the supply to turn off.

Table 1 Disk Drive SBB Physical Data

Disk Drive Model	RZ1DD	RZ1ED
Height	51 mm/ 2.0 in	51 mm/ 2.0 in
Width	121 mm/4.8 in	121 mm/4.8 in
Length	216 mm/8.5 in	216 mm/8.5 in
Weight	1 kg/2.0 lb	0.8 kg/1.75 lb

Table 2 Disk Drive Environmental Data

Operating Temperature	+5° C to +50° C
Operating Relative Humidity	5% to 95%
Non-operating Temperature	−40° C to +70° C
Non-operating Relative Humidity	5% to 95%
Shock	Peak half-sine, 11 ms duration, 10G
Vibration	5–350Hz @0.5G

Table 3 Disk Drive Power Requirements

Disk Drive Model	RZ1DD	RZ1ED
Maximun Seeking Current		
+5Vdc +/– 5%	0.94A	0.89A
+12Vdc +/– 5%	2.3A	3.2A
Typical Power Consumption		
Active	13.4W	18.7W
Idle	11.1W	15.4W

Table 4 Disk Drive Enclosure/Shelf Power Supply Limitations

ENCLOSURE	POWER SUPPLY	LIMITATIONS
Ultra BA356	180W ps (standard)	No limitations
SW300	With 150W ps	18 drive limit
SW300	With 180W ps	No limitations
BA347	With 200W ps	No limitations
BA356	With 150W ps	No limitations
BA356	With 48V ps	No limitations
BA370	180W ps (standard)	No limitations

Table 5 Disk Drive Logical configuration

Disk Drive Model	RZ1DD	RZ1ED
Number of read/write heads	6/12	12/24
Servo	Embedded	Embedded
Bytes/sector	512	512
Spin-up Delay	4 Sec	4 Sec
Formatted Capacity	9.1GB	18.2GB

Application Notes

Notes for Alpha Windows NT, Intel MS-DOS, Windows, WindowsNT, and Netware Users

There are no known special operating system-specific instructions regarding the use of these device.

Notes for DIGITAL UNIX Users

These UltraWide SCSI disk drives require DIGITAL UNIX operating software to be minumum Version 3.2G or 4.0.

Notes for OpenVMS Users

These UltraWide SCSI disk drives require OpenVMS operating software to be at least Version 6.0 for OpenVMS VAX. OpenVMS Alpha users require Version 6.2.

Notes for HP Users

These UltraWide SCSI disk drives require HP-UX Version 10.20 or 11.00

Notes for IBM AIX RS/6000 Users

These UltraWide SCSI disk drives require minimum AIX Version 4.2 or 4.3. After you have connected the drive to the SCSI bus appropriately, you can install the drive from the root account by using SMIT. Enter the following:

> **`# smit dev`**

and then perform the following two steps:

1. Choose *`Configure Devices Added After IPL`* from the menu and then exit SMIT.

2. Execute either of the following selections, as applicable:

    a. If you want to add the disk to a new volume group, enter:

    > **`# smit vg`**

    then choose:

    > *`Add a Volume Group`* from the menu, and follow the normal procedures for this operation.

    b. If you want to add the disk to an already existing volume group, enter:

    > **`# smit lv`**

    then choose**:**

    > *`Add a Logical Volume`* from the menu, and follow the normal procedures for this operation.

As an alternative to using SMIT, you can use the following commands while logged into the root account:

1. **# cfgmgr**

2. **# lsdev -Cc disk**

    Example:

    > **`# lsdev -Cc disk`**
    > `hdisk1 Available 00-03-00-20 Other SCSI Disk Drive`

3. Depending on whether :

    a. A new volume group is to be added:

      i. **`# mkvg -f -y<newvg> -s<size> <new‿disk>`**
      ii. **`# varyonvg <newvg>`**

    > or

    b. The drive is added to an existing volume group:

    > **`#extendvg -f <oldvg> <new‿disk>`**

    where the angle-bracketed options are:

    > `<newvg>` is the volume group name to be added.
    > `<oldvg>` is an existing volume group.
    > `<size>` is the physical partition size (normally 4).
    > `<new-disk>` is the disk added, as identified by the *lsdev* command.

For additional help on these commands refer to the ***man*** pages.

Notes for SGI IRIX Users

SGI uses ID0 instead of ID7 for the initiator, therefore, ID0 cannot be used for a device ID. Your 16-bit I/O module has been delivered numbering device slots 0–7 with IDs 0–7 and must be changed if you want to use device slot 0.

With power OFF, remove the I/O module from the top of the pedestal and place it on a bench with the handles facing to the right. The 7 position SBB I/O module shelf address switch will be in the upper left hand corner of the I/O module. Switch 1 is on the right and switch 7 is on the left. As delivered, all switches should be depressed on the top (0) resulting in a shelf address setting of 000.

Following are a few suggested Single Bus, Single Shelf address settings:

Switch Setting	Slots						
	0	1	2	3	4	5	6
007	8	9	10	11	12	13	14
012	4	5	6	7	12	13	14

Other switch settings can be found in the *DIGITAL StorageWorks SBB Shelf I/O Modules User's Guide* (EK–SBBIO–UG. A01)

Notes for Solaris Users

/etc/format.dat information: Note that we designated a fixed *nsect* value, even though this banded drive allows a different number of sectors/track, depending on the radius of a given track. We determined this value by dividing the total number of blocks by the total number of heads, dividing that result by the total number of cylinders, and then rounding down the result to the next whole number. Some partition sizes also were selected to be consistent with the *newfs* command. (For example, we reduced the "g" partition to avoid truncation of the last cylinder group.) We recommend that you enter this information into your */etc/format.dat* file so that the data will be readily available for any possible future use:

```
# Nine Gigabyte Disk
# New disk/partition type saved on Sun Aug 16 22:48:40 1998
#
disk_type =  "DEC-RZ1DD-LS(C)DEC-0306" \
        : ctlr = SCSI : ncyl = 5271 : acyl = 2 ; pcyl = 5273 \
        : nhead = 20 : nsect = 168 : rpm = 10045

# For Solaris systems, the partition data is as follows:
partition =  "original" \
        : disk = "DEC-RZ1DD-LS(C)DEC-0306" : ctlr = SCSI \
        : 0 = 0, 265440 : 1 = 79, 265440 : 2 = 0, 17710560 \
        : 6 = 158, 17179680
```

```
# Eighteen Gigabyte Disk
# New disk/partition type saved on Sun Aug 16 22:41:12 1998
#
disk_type =  "DEC-RZ1ED-LS(C)DEC-0306" \
        : ctlr = SCSI : ncyl = 6999 : acyl = 2 ; pcyl = 7001 \
        : nhead = 20 : nsect = 254 : rpm = 10045

# For Solaris systems, the partition data is as follows:
partition =  "default" \
        : disk = "DEC-RZ1ED-LS(C)DEC-0306" : ctlr = SCSI \
        : 0 = 0, 264160 : 1 = 52, 264160 : 2 = 0, 35554920 \
        : 6 = 104, 35026600
```

NOTE

Firmware revision level (e.g., DEC–0306) might vary.

For Solaris systems, when the format utility is run, it automatically configures the disks by reading the disk firmware. However, it does not automatically write this label information onto the disk and the autoconfig label is slightly different from the label provided here. Select the disk, then select the "type" option from the format command. Select the label number for the DEC–RZ1DD or RZ1ED. Finally, use the "label" option to write the label information onto the disk.