



RZ28L, RZ29L, and RZ40 Fast Narrow Disk Drive StorageWorks Building Blocks

StorageWorks 
Product Notes

This Product Note contains disk specifications and application notes for the DS-RZ28L-VA, DS-RZ29L-VA, and DS-RZ40-VA family of disk drive SBBs.

Overview of StorageWorks Building Blocks

Thank you for purchasing one of our disk StorageWorks Building Blocks (SBB), 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, 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, and Sun SPARC system platforms.

Specifications

Special features of note include:

- SCSI disk drive in a SBB
- Leading edge technology – Magneto Resistive (MR) heads
- 7200 rpm; 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 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 4) times the SCSI ID of the drive; e.g., drive in SCSI ID2 delays 2 times the predetermined delay before spin up; drive in SCSI ID6 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 Physical Data

SBB Physical Data			
Disk drive Model	RZ28L	RZ29L	RZ40
Height	51 mm/2.0 inches	51 mm/2.0 inches	51 mm/2.0 inches
Width	121 mm/4.8 inches	121 mm/4.8 inches	121 mm/4.8 inches
Length	216 mm/8.5 inches	216 mm/8.5 inches	216 mm/8.5 inches
Weight	0.6 Kg/1.32 lbs	0.63 Kg/1.38 lbs	1.05 Kg/2.31 lbs

Table 2 Disk Drive Environmental Data

Environmental	
Non-Operating:	
Temperature	-40° C to +66° C
Humidity (RH)	5% to 95%, noncondensing
Operating:	
Temperature	+5° C to +50° C
Humidity (RH)	8% to 80%, noncondensing
Shock	10 G peak half-sine 11 ms duration
Vibration	22–400 Hz @ 0.5 G

Table 3 Disk Drive Power Requirements

Power Requirements			
Disk Drive Model	RZ28L	RZ29L	RZ40
Seeking current (Max.)			
+5 Vdc +/-5%	.81 A	.81 A	0.91 A
+12 Vdc +/-5%	.85 A	.85 A	1.18 A
Power consumption: (Typical)			
Active	12.3 W	12.8 W	15.5 W
Idle	8.5 W	8.8 W	13.2 W

Table 4 Disk Drive Logical configuration

Logical Configuration			
Disk Drive Model	RZ28L	RZ29L	RZ40
# of heads	16	20	20
Servo	Embedded	Embedded	Embedded
Formatted capacity	2.10 GB	4.29 GB	9.10 GB
Number of cylinders	3,045	3,708	5,273
Tracks per surface	3,045	3,708	5,273
Bytes/sector	512	512	512
Sectors/drive	4,110,479	8,380,079	17,773,523
Spin up Delay	4–12 Sec	4–12 Sec	4–12 Sec

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 this device.

Notes for DIGITAL UNIX Users

The RZ40 9.1 GB Narrow disk drive requires DIGITAL UNIX operating software to be Version 3.2D or 4.0.

Notes for OpenVMS Users

The RZ40 9.1 GB Narrow disk drive requires OpenVMS operating software to be at least Version 6.0 for OpenVMS VAX. OpenVMS Alpha users require Version 6.2.

Notes for HP Users

Model HP 9000 Series 700/800 */etc/disktab* and LVM Information (HP-UX V10.x)

Although a *disktab* table is currently present in HP-UX V10.x, it is present mainly for reference. The V10 *newfs* command uses default disk geometry values to create a filesystem. For most users this method is sufficient, but some users may notice a slight decrease in the filesystem size as compared to the same filesystem in V9.0x. To optimize the filesystem size, it will be necessary to create a *disktab* entry for slice 0 using *disksecln*. Use the geometry information given below for this drive and use information in the */etc/disktab* table as a guide for creating the entry for this drive. You must use minus 1 (-1) as a value for *s0* (e.g., *:s0#-1*) instead of the actual value. Then execute the *newfs* command with the *-O* option (e.g., *newfs -O RZ40 /dev/vg01/r1vo11*).

Table 5 Disk Geometry

Geometry Information			
Disk Drive Model	RZ28L	RZ29L	RZ40
Disk type:	Winchester	Winchester	Winchester
Sector size:	1024	1024	1024
Number of sectors/track:	86	113	168
Number of tracks/cylinder:	16	20	20
Number of cylinders:	3045	3078	5273
Revolutions per minute:	7200	7200	7200

Notes for IBM AIX RS/6000 Users

After you have appropriately connected the drive to the SCSI bus, 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 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:

```
disk_type = "DEC_RZ28L-AA@DEC-LYJ0"
: ctrl = SCSI :
: ncyl = 2985 : acyl = 2 : pcyl = 2987 : nhead = 16 : nsect = 86 \
: rpm = 7200 :
For Solaris systems, the partition data is as follows:
partition = "DEC_RZ28L" \
: disk = "DEC_RZ28L" : ctrl = SCSI \
: 0 = 0 132096 : 1 = 96, 262816 : 2 = 0, 4107360 : 6 = 287, 3712448
```

```
disk_type = "DEC_RZ29L-AA@DEC-LYJ0"
: ctrl = SCSI :
: ncyl = 3706 : acyl = 2 : pcyl = 3708 : nhead = 20 : nsect = 113 \
: rpm = 7200 :
For Solaris systems, the partition data is as follows:
partition = "DEC_RZ29L" \
: disk = "DEC_RZ29L" : ctrl = SCSI \
: 0 = 0, 262160 : 1 = 116, 262160 : 2 = 0, 8375560 : 6 = 232, 7851240
```

```
disk_type = "DEC_RZ40-AA@DEC-LYJ0"
: ctrl = SCSI :
: ncyl = 5271 : acyl = 2 : pcyl = 5273 : nhead = 20 : nsect = 168 \
: rpm = 7200 :
For Solaris systems, the partition data is as follows:
partition = "DEC_RZ40" \
: disk = "DEC_RZ40" : ctrl = SCSI \
: 0 = 0, 265440 : 1 = 79, 265440 : 2 = 0, 17710560 : 6 = 158, 17179680
```

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_RZ40. Finally, use the “label” option to write the label information onto the disk.

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