

SWXD3-WC

1.05 GB 3.5-Inch

Low Profile 16-Bit

Disk Drive SBB



Product Notes

EK-SM2DI-PN. C01

Thank you for purchasing our SWXD3-WC StorageWorks Building Block (SBB), designed and manufactured by Digital Equipment Corporation. This 1.05-GB, 3.5-inch low-profile disk drive is compatible with SCSI-2 single-ended 16-bit interface standards. This drive has been Novell and Microsoft Windows certified and is supported on all Intel compatible Windows, Windows NT and Novell Systems. It is also supported for use with IBM RS/6000, Sun SPARC systems, and HP9000 700/800 Series platforms.

Brief Overview of SWXD3-WC Drive:

This 3.5-inch drive has a formatted capacity of 1.05 GB. It features an average seek time of 9.5 ms and an average latency of 5.6 ms, providing an average data-access time of 15.1 ms. The drive has a 512 KB segmented cache buffer that maximizes cache hit rate for sequential reads, using a unique firmware algorithm to store a copy of the next track to be read before your host system asks for that data.

The SWXD3-WC drive offers unsurpassed data integrity, featuring a 264-bit ECC that can correct up to 11 non-contiguous bytes per block. The drive

provides multiple copies of the header for each sector, along with embedded servo data for fine-tuning the head position to ensure addressing. In addition, the drive electronics add end-to-end checksum error detection code (EDC) to ensure the integrity of the data returning to the system bus.

Other special features of note include:

- Low profile hard drive technology
- Fast/Wide SCSI-2 single-ended interface
- Seek ordering
- Automatic sector reallocation
- Tagged command queuing
- Zero-latency read and messages
- Staggered disk spin-up
- Self diagnostics
- Pre-labeled for Sun systems
- 5-year warranty
- UL, CSA, and VDE standards

This drive is supported for use in wide (16-bit) storage enclosures. It can co-exist with narrow (8-bit) devices in a wide enclosure.

SWXD3-WC Application Notes:

- 1.** The SWXD3-WC 3.5-inch disk drive has been designed to be compatible with many data-storage applications. This SBB is ready to be used when attached to qualified Industry-standard SCSI Adapters and corresponding SCSI driver software.
- 2.** The generic model number of the internal 3.5-inch disk drive is RZ26LW. The drive identifies itself as DEC RZ26L when interrogated by the SCSI driver software.
- 3.** Standard SWXD3-WC units do not automatically supply voltage to the spindle motor when installed in a computer system, but instead must be switched on by the host computer. The SWXD3-WC has a modified turn-on circuit that automatically spins up the drive after a delay period which is a multiple of the applicable SCSI address for that drive, each eight seconds longer than the preceding one. This arrangement, required for operating systems that do not have a facility for motor spin-up, means that successive drives in an array automatically spin up following a staggered delay.

This sequence avoids excessive loading of the power supply. If this automatic spin up feature of the disk drive must be disabled for a specific operating system that is not compatible with this feature, please contact your supplier for instructions.

- 4.** Some SCSI adapters provide options within 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 SWXD3-WC sequences power to the disk drive motors one at a time. This sequencing avoids out-of-specification surges of power supply current, which under extreme conditions could cause the supply to turn off.

SWXD3-WC Specifications:

Physical Configuration	
Number of discs (platters)	4
Number of read/write heads	8
Servo	Embedded
Unformatted capacity	1,368 MB
Formatted capacity	1,050 MB
Number of cylinders	3,117
Tracks per surface	3,117
Track capacity (bytes) ¹	30,208 – 60,928
Bytes/sector	512
Sectors/track ¹	59 – 119
Sectors/drive	2,050,860

Power Requirements		
Seeking current	Typical	Max.
+5 Vdc +/-5% (typical)	0.71 A	1.0 A
+12 Vdc +/-5% (typical)	0.85 A	2.0 A
Power consumption:		
Active (100% seeking)	10 W	12.3 W
Active (40% seeking)	9.0	12.2 W
Idle	8.5W	11.2 W

Performance Specifications	
Interface transfer rate:	
Synchronous (8-bit)	10 MB/s
Synchronous (16-bit)	20 MB/s
Asynchronous (8-bit)	5 MB/s
Asynchronous (16-bit)	10 MB/s
Media transfer rate	2.7 – 5.5 MB/s
Cache buffer	512 KB
Track-to-track seek:	1 ms
Rotational Speed	5400 rpm

Recording	
Track density	3,256 tpi
Bit density	61,500 bpi
Areal density ¹	191–200 MB/in ²
Recording method	RLL (1,7)

¹ Value depends upon disk band.

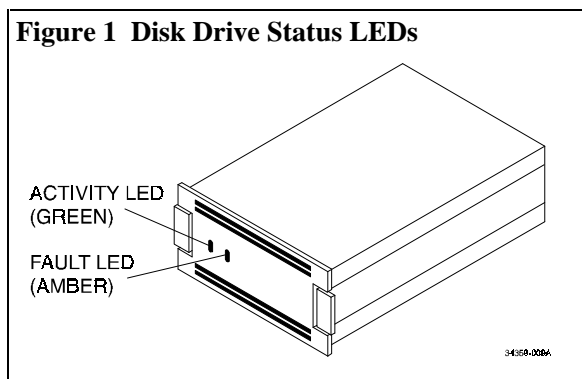
Power On Test

Disk drive status is displayed by two LEDs on the front of the storage device (Figure 1). Each LED has three states: *on*, *off*, and *flashing*. When the drive is powered on, both LEDs flash as a hardware/lamp test and then assume the following normal operating status activity:

Physical	
Height	51 mm/2.0 inches
Width	121 mm/4.8 inches
Length	216 mm/8.5 inches
Weight	0.76 kg/1.67 lbs

Environmental Specifications	
Non-Operating:	
Temperature	-40° C to +66° C
Humidity (RH)	8% to 95%, noncondensing
Operating:	
Temperature	+5° C to +55° C
Humidity (RH)	10% to 90%, noncondensing
Shock	10 G peak half-sine 10 ms duration
Vibration	22–500 Hz @ 0.5 G peak
Acoustics:	
Seeking	36 dBA @ 1.0 meter
Idle	32 dBA @ 1.0 meter

Figure 1 Disk Drive Status LEDs



- The left LED (green) is the device-controlled activity LED and is on or flashing when the drive is active.
- The right LED (amber) is the drive-associated fault LED and indicates an error condition when either on or flashing. This LED is controlled by some adapters or RAID controllers.

Notes for SunOS and Solaris Users

/etc/format.dat information: For your convenience, we have labeled this drive with a format utility for the following settings, giving the drive traditional partitions, so you can install this unit and get it up and running quickly. 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_RZ26L" \  
: ctlr = SCSI : fmt_time = 4 \  
: nctl = 3115 : acyl = 2 : pctl = 3117 : nhead = 8 : nsect = 82 \  
: rpm = 5400 : bpt = 41984  
For SunOS systems, the partition data is as follows:  
partition = "DEC_RZ26L" \  
: disk = "DEC_RZ26L" : ctlr = SCSI \  
: a = 0, 65600 : b = 100, 131200 : c = 0, 2043440 : g = 300, 1846640  
For Solaris systems, the partition data is as follows:  
partition = "DEC_RZ26L" \  
: disk = "DEC_RZ26L" : ctlr = SCSI \  
: 0 = 0, 65600 : 1 = 100, 131200 : 2 = 0, 2043440 : 6 = 300, 1846640
```

Notes for HP-UX Users

HP-UX Operating System Information

The following required disktab information is provided for users of HP-UX V9 and earlier. Starting with HP-UX V10.0, disktab information is provided for reference only and its use is discouraged by HP. The *newfs* command uses geometry information stored on the disk and therefore no longer requires a disktab entry

Model HP 9000 Series 700 */etc/disktab* Information:

This disk has been formatted and is ready for a file system. For the convenience of HP 9000 Series 700 users, we have provided a few suggested disktab entries, as listed below, that you can use with the *newfs* command. We recommend that you enter this information into your */etc/disktab* file at your earliest convenience so that the data will be readily available for future use.

```
DEC_RZ26L|DEC_RZ26L_noswap:\  
:ty=direct access:ns#82:nt#8:nc#1563:\  
:s0#1025328:b0#8192:f0#1024:\  
:se#512:rm#5400:  
DEC_RZ26L|DEC_RZ26L_100MB:\  
:100 MB reserved for swap & boot:ns#82:nt#8:nc#1407:\  
:s0#922992:b0#8192:f0#1024:\  
:se#512:rm#5400:  
DEC_RZ26L|DEC_RZ26L_200MB:\  
:200 MB reserved for swap & boot:ns#82:nt#8:nc#1250:\  
:s0#820000:b0#8192:f0#1024:\  
:se#512:rm#5400:
```

Model HP 9000 Series 800 */etc/disktab* and LVM Information:

We recommend that HP 9000 Series 800 users use the *disksecl* command to create a disktab entry. This must be done before creating partitions or logical volumes. To do this, as superuser, issue the following HP-UX command:

```
disksecl -dn RZ26L >> /etc/disktab
```

and supply the following values as answers for the questions asked by the program during the process:

Disk type: **Winchester**
Sector size: **1024**
Number of sectors/track: **82**
Number of tracks/cylinder: **8**
Number of cylinders: **1563**
Revolutions per minute: **5400**

If you wish to use partitions, only segment 2 can work with this drive under the HP-UX operating system. We therefore suggest that you use the Logical Volume Manager (LVM) to allocate disk space in accordance with the sizes of your filesystems or raw data instead of a single partition. You can do this from the command line or by using the System Administration Manager (SAM) utility. For more information on LVM, refer to *How HP-UX Works: Concepts for the System Administrator* (B2355-90029), Chapter 9. After creating logical volumes and filesystems, you will have more control over the disk than you would have with traditional partitions.

Notes for IBM AIX RS/6000 Users

After you have appropriately connected the drive to the SCSI bus, you can install the SWXD3-WC drive from the root account either by using SMIT, as follows:

1. Enter **# smit dev** and choose “**Configure Devices Added After IPL**” from the menu and then exit.
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**, choose “**Add a Volume Group**” from the menu, and follow normal procedures.
 - b. If you want to add the disk to an already existing volume group, enter **# smit lv**, choose “**Add a Logical Volume**” from the menu, and follow normal procedures.

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).

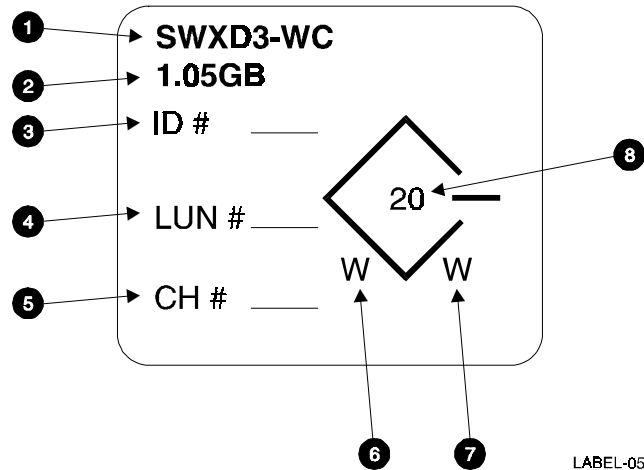
<new-disk> is the disk added, as identified by the `lsdev` command.

Notes for MS-DOS, Windows, Windows NT, and Netware Users

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

StorageWorks Building Block Identification Labels

Each StorageWorks Building Block (SBB) contains an identification label that shows the SBB device type, capacity, and user-specific information. The 16-bit label that appears on the front of the SWXD3-WC is shown below.



- 1 Device type.
- 2 Device capacity.
- 3 The SCSI ID assigned to the device¹.
- 4 The Logical Unit Number assigned to the device¹.
- 5 The RAID Controller Number assigned to the device¹.
- 6 The device bus width. For the SWXD3-WC this value is W.
- 7 Indicates the type of shelf in which the drive can function:
 - N – the device is 8-bit shelf compatible.
 - W – The device is 16-bit shelf compatible.
 - N/W – The device is compatible with either shelf.
- 8 The data transfer rate in MB per second.

¹ These values are determined by the user.

Digital Equipment Corporation does not warrant that the predicted values represent any particular unit installed for customer use. The actual values will vary from unit to unit. These specifications are subject to change without notice. Digital is not responsible for inadvertent errors.

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