SWXD3-SD 2.10-GB 3.5-inch Disk Drive SBB Product Notes

StorageWorks™

Thank you for purchasing our SWXD3-SD StorageWorks Building Block (SBB). This 2.10-GB, 3.5-inch disk drive is compatible with SCSI-2 interface standards. It will function in many operating system environments — and is tested and approved for NOVELL NetWare™.

Overview of the SWXD3-SD Drive:

This 3.5-inch drive has a formatted capacity of 2.10 GB. It features an average read seek time of 9.9 ms and an average latency of 5.5 ms, giving an average data-read access time of 15.4 ms (without cache). Similarly, average write seek time is 11.4 ms, yielding an average data write access time of 16.9 ms. The drive uses a banded recording technique to keep the bit density constant regardless of track radius, obtaining media transfer rates as high as 5.4 MB/s. This drive has a 256-KB segmented cache buffer to maximize the cache hit rate for sequential reads. The 256-KB cache can be optionally programmed into one to sixteen seg-ments; the default program is set for three segments, each about 80 KB in size.

The SWXD3-SD drive also offers high data integrity, ensured by a 96-bit Reed-Solomon error correction code (ECC) and a 32-bit error detection code (EDC). ECC is performed "on the fly," when data is written to or read from the disk drive; this scheme will detect and correct a single 41-bit burst or two 17-bit bursts of defective data in a single block on the disk.

Other special features of note include:

- Asynchronous & synchronous data-transfer protocol
- Downloadable SCSI firmware
- Programmable sector size reallocation
- Tagged command queuing
- Background queue processing
- Self diagnostics
- 500,000-hour MTBF
- UL, CSA, and VDE standards
- FAST SCSI-2 interface

SWXD3-SD Application Notes:

1. The SWXD3-SD 3.5-inch disk drive was designed to be compatible with many data-storage applications. A StorageWorks Building Block (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 RZ28B. The drive will identify itself as "DEC RZ28B" when interrogated by the SCSI driver software.

3. Standard RZ28B 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-SD 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 twelve seconds longer than the preceding one. 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 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 for altering the spin-up jumper on the drive circuit board.

4. Some SCSI adapters provide options in the adapter set-up menu to allow sequential spin-up of the disk drive motor. Although the SWXD3-SD disk drive does not require it, this 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-SD 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-SD Specifications:

Logical Configuration[†]	
Number of discs (platters)	8 (10 physical)
Number of read/write heads	16 (19 physical)
Servo	Dedicated
Formatted capacity	2,105 MB
Number of cylinders	3,045
Tracks per surface	3,045
Track capacity	30,720 to 61,440 bytes
Bytes/sector	512
Sectors/drive	4,110,480

Recording	
Track density	3,000 tpi
Bit density	50,000 bpi
Areal density	150 MB/in^2
Recording method	RLL (1,7)

Environmental	
Non-Operating:	
Temperature	-40° C to 70° C
Humidity (RH)	5% to 95%, noncondensing
Operating:	
Temperature	5° C to 50° C
Humidity (RH)	8% to 80%, noncondensing
Shock	10 G half-sine 11 ms peak duration
Vibration	22–400 Hz @ 1.0 G peak

[†]The SWXD3-SD unit has been designed to have a logical configuration that is equivalent to that of the StorageWorks Model SWXD3-SB 2.1-GB drive, but physical construction of the hard-drive assembly may be different.

Performance	
Interface transfer rate:	
Synchronous (8-bit)	10 MB/s
Asynchronous (8-bit)	5 MB/s
Media transfer rate	3.4-5.4 MB/s
Cache buffer	256 KB
Track-to-track read seek (typical):	1 ms

Physical	
Height	41.1 mm/1.62 inches
Width	101.6 mm/4.0 inches
Length	145.8 mm/5.74 inches
Weight	0.93 Kg/2.1 lbs

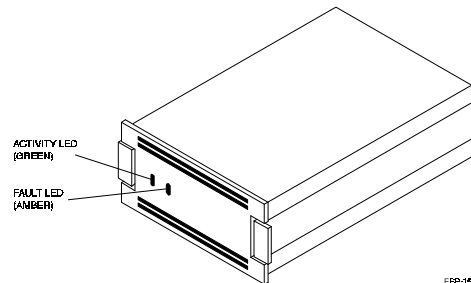| Power Requirements	
Seeking current:	
+5 Vdc +/-5%	1.0 A max.
+12 Vdc +/5%	1.0 A max.
Power consumption:	
Typical operations:	10.8 W
Idle	8.6 W

Figure 1 Disk Drive Status

Power-On Test

Disk drive status is displayed by 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, verify the following normal operating LED status activity.

- The left LED (green) is a device-controlled activity LED and is on or flashing when the drive is active
- The right LED (amber) is the drive fault LED and indicates an error condition when either on or flashing.