



SAMSUNG

# Samsung Spinpoint F1 Hard Disk Drive

Industry's First Three-disk Solution for Terabyte Storage



**The Samsung Spinpoint F1 drive offers a superior combination of density, recording quality and reliability.**

## Better Reliability, Less Energy Consumption Than Other Options

The Samsung Spinpoint F1 is the first three-disk hard drive delivering a whopping 1TB of capacity along with sophisticated recording technology. With its compact, lightweight package and advanced design, the F1 drive offers many advantages for high-density applications compared to using two 500GB drives or a four- or five-disk solution. Compared to a five-disk solution, it consumes 15-20% less power and a 30% greater disk data rate.

This 3Gbps SATA drive has a maximum of 334GB of formatted capacity per disk while also featuring Samsung's industry-leading NoiseGuard™, and SilentSeek™, technologies to eliminate acoustic noise. The Spinpoint F1 utilizes Samsung-developed perpendicular recording technology, which helps the drive set new records in both areal density and platter capacity.

## Reliability Beats Competition

The Spinpoint F1 requires fewer components than competing solutions while delivering enhanced reliability versus a 1TB drive with four or five disks or two 500GB disks. With fewer heads and disks, the F1 statistically has a lower probability of head-disk failures. According to estimates, this Samsung drive has a 50% lower failure rate than a two-500GB-drive solution and as much as 31% fewer failures than five-platter 1TB drives.

## Special Features for High-density Applications

Servers, high-end desktops, RAID systems and DVRs are among the applications well suited to the Spinpoint F1 drive. Servers and RAID systems will particularly benefit from an MTBF of 1.2 million hours compared to the standard .6 million hours. An optional rotational vibration sensor protects data against internal and external impact.

For consumer applications, a power-saving code reduces power consumption while AV-optimized firmware cuts time delays during AV data recording. In general, the Samsung drive offers a superior combination of density, recording quality and reliability.

## Key Features

- Maximum 334GB formatted capacity each in 3 disks
- SATA 3Gbps interface support
- SATA native command queuing
- Supports staggered spin up
- Hot-plug capability
- Device-initiated power management
- ATA S.M.A.R.T. compliant
- ATA automatic acoustic management feature set
- Asynchronous Signal Loss notification
- PMR technology
- Flying-on-Demand technology
- Optional rotational vibration controller
- NoiseGuard and SilentSeek noise suppression




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	CAPACITY <sup>1</sup>		320GB	500GB	750GB	1TB
Model & Buffer	8MB	HD321HJ	HD501IJ	N/A	N/A	N/A
	16MB	HD322HJ	HD502IJ	HD752LJ	HD102UJ	
	32MB	N/A	N/A	HD753LJ	HD103UJ	

#### DRIVE CONFIGURATION

Interface	Serial ATA 3.0 Gbps
Bytes per Sector	512
Buffer DRAM Size	8/16/32 MB

#### PERFORMANCE SPECIFICATIONS

Read Seek Time (typ.)	
Track-to-Track	0.8 ms
Average	8.9 ms
Full Stroke	20 ms
Average Latency	4.17 ms
Rotational Speed <sup>2</sup>	7,200 RPM
Data Transfer Rate	
Media to/from Buffer (max.)	175 MB/sec
Buffer to/from Host (max.)	300 MB/sec
Drive Ready Time (typ.)	10 sec

#### RELIABILITY SPECIFICATIONS

Non-recoverable Read Error 1 sector in 10 <sup>14</sup> bits	
MTBF	600,000 POH
Start/Stop Cycles (Ambient)	50,000
Component Design Life	5 years

#### ACOUSTICS (AVERAGE SOUND POWER)<sup>3</sup>

Idle	1 disk	2.45 Bel
	2/3 disk	2.7 Bel
Performance Seek	1 disk	2.8 Bel
	2/3 disk	2.9 Bel
Quick Seek	1 disk	2.75 Bel
	2/3 disk	2.8 Bel

#### PHYSICAL DIMENSIONS

Height	26.10 mm
Length	147.00 mm
Width	101.60 mm
Weight	672 grams

#### ENVIRONMENTAL SPECIFICATIONS

Temperature	
Operating	0-60°C
Non-operating	40-70°C
Thermal Gradient (max)	30°C/hr
Humidity (non-condensing)	
Operating	5-90 %
Non operating	5-95 %
Linear Shock (1/2 sine pulse)	
Operating, 2ms	70 G
Non-operating, 2ms	1 disk 350 G
	2/3 disk 300 G
Altitude (relative to sea level)	
Operating, 2ms	-1,000 to 10,000 feet
Non-operating, 2ms	-1,000 to 40,000 feet

#### POWER REQUIREMENTS

Voltage	+5V±5%	+12V±10%
Spin Up Current (12V)	1 disk	2.0 A
	2/3 disk	2.3 A
Seek <sup>4</sup>	1 disk	9.5 W
	2/3 disk	13.4 W
Read/Write	1 disk	8.0 W
	2/3 disk	9.5 W
Idle	1 disk	5.4 W
	2/3 disk	8.2 W
Standby <sup>5</sup>	1 disk	1.0 W
	2/3 disk	1.2 W
Sleep <sup>5</sup>	1 disk	1.0 W
	2/3 disk	1.2 W

- 1MB=1,000,000 bytes 1GB= 1,000,000,000 bytes 1TB=1,000,000,000,000 bytes or 931.51GB  
Accessible capacity may vary because some OSES use binary numbering systems for reported capacity
- 7200RPM class. Actual speed can be slightly different
- Average value with a high-performance cover
- Random seek with 30% duty cycle
- Power consumption with/without slumber mode

Notes: Design and specifications are subject to change without prior notice.



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