

### Overview

### Introduction

HP SAS (Serial Attached SCSI) HDDs (Hard Drives) are high-performance alternatives to SATA hard drives. SAS hard drives combine high-bandwidth and faster data transfer rates with better error detection and recovery, as well as having higher reliability specifications.

SAS based hard drives are ideal for projects requiring transactional applications and performance oriented requirements where throughput and reliability are an absolute must.

### Performance

HP SAS Hard Drives offer sustained data transfer rates of up to 112 to 200 MB/s (Inner Diameter to Outer Diameter) for sequential read operations. Sustained data transfer rates vary with drive speed, capacity and model.

### Models

600GB SAS 15K rpm 6Gb/s 3.5" HDD	VM647AA
450GB SAS 15K rpm 6Gb/s 3.5" HDD	LU968AA
300GB SAS 15K rpm 6Gb/s 3.5" HDD	LU967AA
HP 300GB SAS 10K SFF HDD	A2Z20AA
HP 450GB SAS 10K SFF HDD	BOA48AA
HP 600GB SAS 10K SFF HDD	A2Z21AA
HP 900GB SAS 10K SFF HDD	E2P03AA
HP 1.2TB SAS 10K SFF HDD	E2P04AA

### Benefits

- Higher hard drive performance compared to typical SATA drives
- Higher hard drive reliability compared to typical SATA drives
- "Star" topology (point-to-point, no hubs). Each device gets full bus bandwidth.
- Minimum device arbitration overhead
- True full duplex communications, transfers both read and write data simultaneously on 1 port.
- Features SMART and Drive Self Test hard drive technologies.

### Compatibility

Most HP Serial Attached SCSI Hard Drives are compatible with the HP Z420, Z620, Z820, and Z400, Z600, Z800 workstations (check individual workstation QuickSpecs documents to confirm drive support).

**NOTE:** 15K RPM drives spin at very high RPM, therefore they tend to vibrate more than 7200 RPM drives. The result is higher system acoustics. The 600GB drive exhibits this characteristic more than the other SAS drives.

The transition to 6Gb/s technology occurred in August 2010. Systems shipped during the transition period may have either 3Gb/s or 6Gb/s drive technology. All systems ship today with SAS drives that are 6Gb/s technology.

### Overview

#### **Service and Support**

SAS hard drives have a one-year Limited Warranty or the remainder of the warranty of the HP product in which it is installed (which ever is longer). Technical support is available seven days a week, 24 hours a day by phone, as well as in online support forums. Certain restrictions and exclusions apply.

### Technical Specifications

#### Hard Drives

<b>600GB SAS 15K rpm 6Gb/s 3.5" HDD</b>	<b>Capacity</b>	600GB	
	<b>Height</b>	1 in; 2.54 cm	
	<b>Width</b>		
		<b>Media Diameter</b>	3.5 in; 8.9 cm
		<b>Physical Size</b>	4 in; 10.17 cm
	<b>Interface</b>	SAS	
	<b>Synchronous Transfer Rate (Maximum)</b>	6.0 Gb/s	
	<b>Buffer</b>	16 MB	
	<b>Seek Time (typical reads, includes controller overhead, including settling)</b>	<b>Single Track</b>	0.2 ms
		<b>Average</b>	3.4 ms
		<b>Full Stroke</b>	6.6 ms
	<b>Rotational Speed</b>	15,000 rpm	
	<b>Logical Blocks</b>	1,172,123,568 - 512 byte blocks	
<b>Operating Temperature</b>	50° to 95° F (10° to 35° C)		

<b>450GB SAS 15K rpm 6Gb/s 3.5" HDD</b>	<b>Capacity</b>	450GB	
	<b>Height</b>	1 in; 2.54 cm	
	<b>Width</b>		
		<b>Media Diameter</b>	3.5 in; 8.9 cm
		<b>Physical Size</b>	4 in; 10.17 cm
	<b>Interface</b>	SAS	
	<b>Synchronous Transfer Rate (Maximum)</b>	6Gb/s	
	<b>Buffer</b>	16MB	
	<b>Seek Time (typical reads, includes controller overhead, including settling)</b>	<b>Single Track</b>	0.2 ms
		<b>Average</b>	3.4 ms
		<b>Full Stroke</b>	6.6 ms
	<b>Rotational Speed</b>	15,000 rpm	
	<b>Operating Temperature</b>	50° to 95° F (10° to 35° C)	

<b>300GB SAS 15K rpm 6Gb/s 3.5" HDD</b>	<b>Capacity</b>	300GB	
	<b>Height</b>	1 in; 2.54 cm	
	<b>Width</b>		
		<b>Media Diameter</b>	3.5 in; 8.9 cm
		<b>Physical Size</b>	4 in; 10.17 cm
	<b>Interface</b>	SAS	
	<b>Synchronous Transfer Rate (Maximum)</b>	6Gb/s	
	<b>Buffer</b>	16MB	

### Technical Specifications

	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.2 ms
		<b>Average</b>	3.4 ms
		<b>Full Stroke</b>	6.6 ms
	<b>Rotational Speed</b>		15,000 rpm
	<b>Operating Temperature</b>		50° to 95° F (10° to 35° C)
<b>HP 300GB SAS 10K SFF HDD</b>	<b>Capacity</b>		300GB
	<b>Height</b>		0.6 in; 1.53 cm
	<b>Width</b>	<b>Media Diameter</b>	2.5 in; 6.36 cm
		<b>Physical Size</b>	2.75 in; 6.99 cm
	<b>Interface</b>		SAS 6Gb/s
	<b>Synchronous Transfer Rate</b> (Maximum)		Up to 600MB/s
	<b>Buffer</b>		64MB
	<b>Cache</b>		multi-segmentable cache buffer
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.4 ms (max)
		<b>Average</b>	3.6 ms
		<b>Full Stroke</b>	7.3 ms
	<b>Rotational Speed</b>		10,000 rpm
	<b>Logical Blocks</b>		585,937,500
	<b>Operating Temperature</b>		41° to 131° F (5° to 55° C)
<b>HP 450GB SAS 10K SFF HDD</b>	<b>Capacity</b>		450GB
	<b>Height</b>		0.6 in; 1.53 cm
	<b>Width</b>	<b>Media Diameter</b>	2.5 in; 6.36 cm
		<b>Physical Size</b>	2.75 in; 6.99 cm
	<b>Interface</b>		SAS 6Gb/s
	<b>Synchronous Transfer Rate</b> (Maximum)		Up to 600MB/s
	<b>Buffer</b>		64MB
	<b>Cache</b>		multi-segmentable cache buffer
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.4 ms(max)
		<b>Average</b>	3.6 ms
		<b>Full Stroke</b>	7.3 ms
	<b>Rotational Speed</b>		10,000 rpm
	<b>Operating Temperature</b>		41° to 131° F (5° to 55° C)
<b>HP 600GB SAS 10K SFF</b>	<b>Capacity</b>		600GB

### Technical Specifications

#### HDD

<b>Height</b>	0.6 in; 1.53 cm
<b>Width</b>	<b>Media Diameter</b> 2.5 in; 6.36 cm
	<b>Physical Size</b> 2.75 in; 6.99 cm
<b>Interface</b>	SAS 6Gb/s
<b>Synchronous Transfer Rate (Maximum)</b>	Up to 600MB/s
<b>Buffer</b>	64MB
<b>Cache</b>	multi-segmentable cache buffer
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b> 0.4 ms(max)
	<b>Average</b> 3.6 ms
	<b>Full Stroke</b> 7.3 ms
<b>Rotational Speed</b>	10,000 rpm
<b>Logical Blocks</b>	1,172,123,568
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)

#### HP 900GB SAS 10K SFF HDD

<b>Capacity</b>	900GB
<b>Height</b>	0.6 in; 1.53 cm
<b>Width</b>	<b>Media Diameter</b> 2.5 in; 6.36 cm
	<b>Physical Size</b> 2.75 in; 6.99 cm
<b>Interface</b>	SAS 6Gb/s
<b>Synchronous Transfer Rate (Maximum)</b>	Up to 600MB/s
<b>Buffer</b>	64MB
<b>Cache</b>	multi-segmentable cache buffer
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b> 0.2ms (max)
	<b>Average</b> 3.5ms
	<b>Full Stroke</b> 7.0ms
<b>Rotational Speed</b>	10,000 rpm
<b>Logical Blocks</b>	1,758,174,767
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)

#### HP 1.2TB SAS 10K SFF HDD

<b>Capacity</b>	1.2TB
<b>Height</b>	0.6 in; 1.53 cm
<b>Width</b>	<b>Media Diameter</b> 2.5 in; 6.36 cm
	<b>Physical Size</b> 2.75 in; 6.99 cm
<b>Interface</b>	SAS 6Gb/s
<b>Synchronous Transfer Rate (Maximum)</b>	Up to 600MB/s
<b>Buffer</b>	64MB

### Technical Specifications

<b>Cache</b>	multi-segmentable cache buffer
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b> 0.18ms (max) <b>Average</b> 3.5 ms <b>Full Stroke</b> 7.17 ms
<b>Rotational Speed</b>	10,000 rpm
<b>Logical Blocks</b>	2,344,225,968
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)

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