

**Hawk 2XL**

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Fast, Fast Wide and Single Connector Ultra SCSI Interfaces



Low profile design

8-bit and 16-bit Ultra SCSI available

Formatted capacities of 2.15 and 1.05 Gbytes

SCSI-3 SPI and SCAM Plug and Play compliant

5,400 RPM spindle with 5.54 msec average latency

Advanced SCSI architecture II (ASA II)

Embedded servo and PRML channel

 **Seagate**

The Data Technology Company

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Fast, Fast Wide and Single Connector Ultra SCSI Interfaces

The Hawk 2XL family provides formatted capacity choices of 1,080 Mbytes and 2,149 Mbytes in a low profile, 1-inch high, 3.5-inch disc drive.

This fourth generation, high performance platform continues the Seagate tradition of superior performance, quality, and reliability. In addition, the Hawk 2XL enables easy migration to higher areal densities and better value through lower price per Mbyte solutions.

## Features

- Formatted capacities of 2.15 Gbytes and 1.05 Gbytes
- Low profile, 1-inch high design
- Fast SCSI-3 and Fast Wide SCSI-3 high performance interface
- 8-bit and 16-bit Ultra SCSI
- Data rates up to 40 Mbytes per sec
- Advanced SCSI Architecture II (ASA II)
- Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.)
- Rotational Position Seek Sort
- 5,400 RPM spindle with 5.54 msec average latency
- On-the-fly header and data field ECC correction
- BlindMate single connector (80 pin) option
- Hot-Plug Capability
- SCAM Plug-n-Play compliant
- Embedded servo
- PRML channel
- 256 Kbyte (8-bit) and 512 Kbyte (16-bit) programmable multisegmented cache
- Average read seek times of 9 msec
- Track to track read seek times of 1 msec

- 40 to 70 Mbits per second internal data transfer rate
- Low acoustic noise level
- Low power
- Multiphase power management
- 800,000 hours MTBF
- 5 year limited warranty for 2 Gbyte and 3 year limited warranty for 1 Gbyte

## Typical Applications

The Hawk 2XL is a value-oriented design that provides the levels of performance needed for personal and technical workstations as well as the large capacity requirements for file servers. A second generation, embedded servo provides uninterrupted data rates required for multimedia applications. The high performance, multitasking SCSI interface enables the user to take advantage of today's more sophisticated operating systems and CPU bus architectures.

## Advanced SCSI Architecture II (ASA II)

Hawk 2XL shares Seagate's Advanced SCSI Architecture II (ASA II) with all Hawk, Barracuda and Elite families. ASA II incorporates a Seagate-designed SCSI controller and a highly efficient, low command overhead firmware base.

ASA II, the second generation of Seagate's original ASA, provides significant performance increases in sequential and random modes of operation. ASA II is fully compatible with all industry standard SCSI implementations. ASA II provides easy product migration when capacity or performance requirements change.

## Rotational Position Seek/Sort

Rotational position seek/sort (RPS), a new feature of ASA II, improves performance in a random tagged environment. The SCSI interface provides the capability to reorder read/write commands, minimizing the access time. Rotational position seek/sort enhances this feature by comparing the rotational and physical location of the next data blocks in relationship to the read/write head. RPS maximizes performance by selecting the closest possible data block, eliminating unnecessary disc rotation time.

## Ultra SCSI Interface

The Hawk 2XL family offers Seagate's full-featured 8-bit or 16-bit Ultra SCSI interface as an option. 8-bit Ultra SCSI provides a data rate of 20 Mbytes per second, double the standard 8-bit data rate, using the same 50-pin physical connection. Data rates of 40 Mbytes per second are available using the standard 68-pin wide connector or the BlindMate single connector attachment.

## BlindMate Single Connector Attachment

The BlindMate single connector attachment incorporates all of the disc connections and configurations into a single point of connection. This feature is beneficial for those applications requiring a hot-plug solution. The single connector is very well suited to disc array and server applications where multiple drives reside in the same cabinet. This configuration eliminates the need for multiple cables and drive configuration

settings required by today's multi-drive installations.

This single connector attachment is compatible with both 8- and 16-bit I/O, eliminating the need to change connector configurations when performance requirements change.

#### Wide (16-bit) I/O

The Hawk 2XL family is available with Wide Single-Ended or the BlindMate Single Connector for 16 bit I/O. The Wide (16 bit) I/O option provides a 20 Mbyte per second synchronous data transfer rate, and the Ultra SCSI option doubles this to 40 Mbytes per second.

#### Hot Plug SCSI

The Hawk 2XL can be connected or disconnected from an active SCSI bus with no power transients or data corruption. This is especially desirable in array applications requiring removal of a disc drive while the array is operational.

#### SCAM Plug and Play

Hawk 2XL is SCAM level 1 and level 2 compliant. During the power on sequence, the drive family will accept automatic ID configuration. If a drive is added to an active SCSI bus, it will initiate automatic ID configuration. This feature is beneficial in a multiple SCSI peripheral environment.

#### Embedded Servo

The second generation embedded servo design used on the Hawk 2XL family provides superior noise immunity and faster data transfer rates. An embedded servo design eliminates the

need for thermal compensation, providing the uninterrupted data transfer rates required in today's multimedia, Professional A/V, and high resolution graphics and imaging environments.

#### PRML Channel

The read channel of the Hawk 2XL is designed around the latest PRML (Partial Response Maximum Likelihood) technology. The PRML design provides higher areal density and faster data transfer rates.

#### On-The-Fly Error Correction

True on-the-fly error correction for both the header and data fields is a hardware feature of the Hawk 2XL family. This feature provides increased performance in an error situation.

#### S.M.A.R.T.

Seagate's Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.) provides advance notification of potential drive reliability issues to enhance user protection from data loss.

#### Programmable Multisegmented Cache

The 256 Kbyte (8 bit I/O) and the 512 Kbyte (16 bit I/O) RAM buffer can be selectively divided into as many as 16 equal segments for read and write data caching. Because each segment functions as an independent buffer, throughput performance is dramatically increased in a multiuser or multitasking environment.

#### Low Power

Idle power requirements for the Hawk 2XL family is a low 6.3 to 6.5 watts. Low power is very important in a temperature sensitive or multiple-drive environment.

#### Standards

Hawk 2XL meets all requirements of UL, CSA, VDE, CE marking, and complies with part 15 of the FCC rules when tested with a class B computing device.

#### Warranty

Seagate provides a standard five year limited warranty to its customers on the 2 Gbyte Hawk 2XL and a three year limited warranty on the 1 Gbyte Hawk 2XL.

#### Repair

Seagate provides a dedicated, factory repair center for all products, utilizing certified factory processes, test equipment, and parts.

#### SCSI Features

- SCSI-3 SPI compliant
- Plug and Play
- Queued commands
- Inquiry command
- Extended sense data
- Extended messages
- Send/receive diagnostic
- Read across cylinder
- Stop unit command
- Deferred status
- Write immediate
- Write merging
- Active termination
- 8-bit and 16-bit Ultra SCSI

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	ST31051N Hawk 2XL	ST31051W ST31051WC Hawk 2XL	ST32151N Hawk 2XL	ST32151W ST32151WC Hawk 2XL
<b>Capacity</b>				
Formatted Mbytes (512 bytes/sector)*	1,080	1,080	2,149	2,149
<b>Interface</b>				
	Fast SCSI-2 (8-bit)	Fast SCSI-2 (16-bit)	Fast SCSI-2 (8-bit)	Fast SCSI-2 (16-bit)
<b>SCSI 3 SPI Compliant</b>				
	Ultra SCSI (8-bit)	Ultra SCSI (16-bit SCA)	Ultra SCSI (8-bit)	Ultra SCSI (16-bit SCA)
<b>Performance</b>				
Internal Transfer Rate, ZBR (Mbits/sec)	44 to 66	44 to 66	44 to 66	44 to 66
External Transfer Rate (Mbytes/sec)	10/20	20/40	10/20	20/40
Multisegmented Cache Buffer (Kbytes)	256 (8-bit)	256 (8-bit)	256 (8-bit)	256 (8-bit)
	512 (16-bit)	512 (16-bit)	512 (16-bit)	512 (16-bit)
Track-to-Track Seek, Read/Write (msec)	1	1	1	1
Average Seek, Read/Write (msec)	9/10.5	9/10.5	9/10.5	9/10.5
Maximum Seek (msec)	22	22	22	22
Spindle Speed (RPM)	5,411	5,411	5,411	5,411
Average Latency (msec)	5.54	5.54	5.54	5.54
<b>Configuration/Organization</b>				
Discs	2	2	4	4
Read/Write Heads	4	4	8	8
Servo	Embedded	Embedded	Embedded	Embedded
Bytes per Sector (typ)	512	512	512	512
Cylinders	4,117	4,117	4,117	4,117
Recording Method	PRML	PRML	PRML	PRML
<b>Reliability/Data Integrity</b>				
MTBF (power on hours)	800,000	800,000	800,000	800,000
Nonrecoverable Read Errors per Bits Read	1 per 10 <sup>14</sup>	1 per 10 <sup>14</sup>	1 per 10 <sup>14</sup>	1 per 10 <sup>14</sup>
Limited Warranty (yrs)	3	3	5	5
<b>Power Requirements</b>				
+12 VDC ±5% (amps typ)	0.38	0.38	0.38	0.38
(amps max)	2.0	2.0	2.0	2.0
+5 VDC ±5% (amps)	0.7	0.7	0.7	0.7
Power (Idle watts)	6.3	6.3	6.5	6.5
<b>Environmental</b>				
Operating Temperature (°C)	5 to 55	5 to 55	5 to 55	5 to 55
Nonoperating Temperature (°C)	-40 to 70	-40 to 70	-40 to 70	-40 to 70
<b>Physical</b>				
Height (inches/mm)	1/25.4	1/25.4	1/25.4	1/25.4
Width (inches/mm)	4/101.6	4/101.6	4/101.6	4/101.6
Depth (inches/mm)	5.74/146.1	5.74/146.1	5.74/146.1	5.74/146.1
Weight (lb/kg)	1.5/0.68	1.5/0.68	1.5/0.68	1.5/0.68



**Seagate**

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