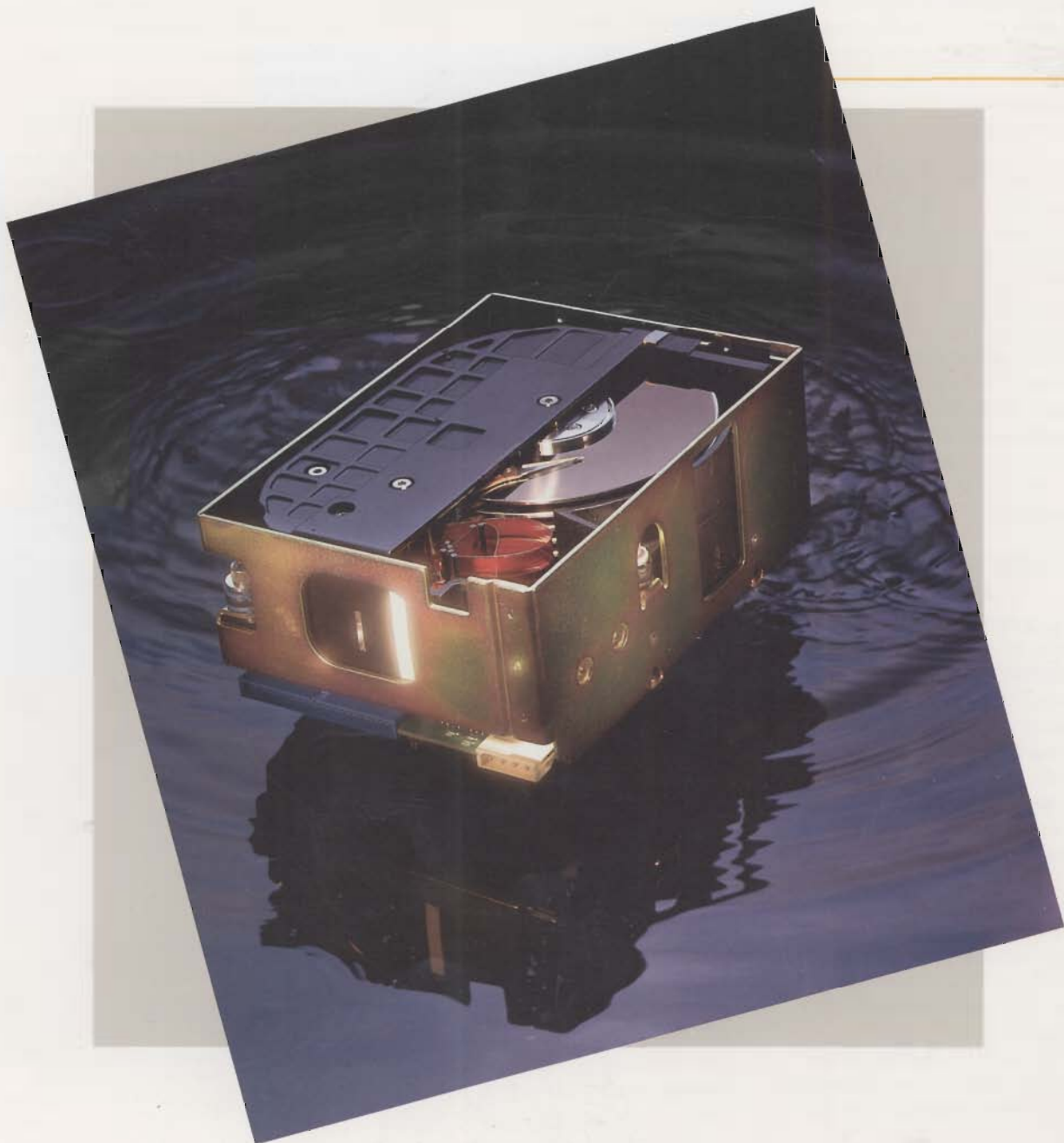


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## HP C3010, C3009 and C3007 Series 5.25-inch SCSI-2 Disk Drives

### Product Brief

- 2.47, 2.21 and 1.69 Gbytes
- 5400 RPM
- 300,000 hours MTBF
- 5-year warranty
- 20 Mbytes/s transfer rate



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## Answering Performance and Capacity Needs

Among the best-performing in the disk drive industry, the HP C3010, C3009 and C3007 disk drives offer a synchronous transfer rate of 20 Mbytes/s and a media transfer rate up to 42 Mbits/s. That means you and your customers get the information you need fast.

And because the drives are Hewlett-Packard drives, you not only get your data quickly, but reliably too. HP's world-renowned dependability translates into increased system uptime and better data integrity.

Ideal for integration into mainframes, multiuser computers, high-end workstations and PC servers, the HP C3010, C3009 and C3007 disk drives offer unformatted capacities of 2.47, 2.21 and 1.69 gigabytes, respectively. Each model is available with a single-ended, differential, wide differential or dual-port SCSI-2 controller. The drives spin at 5,400 rpm for a 5.5-ms latency time. Controller overhead time is a mere 500 microseconds.

## Fast and Wide SCSI-2

Attaining the 20-Mbyte/s synchronous transfer rate is simple with HP's fast — and wide — SCSI-2 controller. Fast SCSI refers to the frequency in which 8 bits of data are transferred through the SCSI channel. HP's wide SCSI transfers information 16 bits at a time. In addition, it accommodates up to 16 devices on the same SCSI channel.

Configuring the drives for maximum performance in your particular environment is made easier with HP's SCSI-2 controller options. Bus activity/inactivity limits and buffer full/empty features can be tuned for single-drive or multiple-drive configurations and may provide up to 30%

performance increase through effective bus use. Programmable prefetch is tunable to maximize sequential throughput or random access environments. And command queuing with advanced reordering works in conjunction with the system to maximize system efficiency. Enabling write caching significantly increases write performance, and the dual-port option offers additional accessibility by providing redundant data channels and alternative reset capabilities.

For even added performance, an options connector (with eight selectable functions) is available on the HP C3010 and provides additional configuring flexibility for specific applications. With the addition of just one jumper, the 2.47-Gbyte HP C3010 disk drive (with an 11.5 ms seek time) is transformed into a 1.31-Gbyte (unformatted) drive with a 9.0 ms seek time — one of the fastest seek times in the industry today.

## 300,000 Hours Mean-Time-Between-Failure

Designed and manufactured to the strictest standards, the HP C3010, C3009 and C3007 disk drives have a projected MTBF of 300,000 hours. This quality level is specified because of extensive knowledge acquired over 20 years of disk drive design and integration, as well as setting the highest quality and reliability expectations in the industry. Because previous 5.25-inch HP disk drives have exceeded 300,000 hours over their product lives, HP can confidently offer you the same reliability number with the HP C3010, C3009 and C3007.

## Five-year Warranty and Long-term Support

HP offers a low cost of ownership and long-lasting value, backed by an unconditional five-year warranty. A skilled and capable team

of systems integration engineers provides assistance to all channels. As always, HP will provide parts support for a minimum of five years after date of last manufacture.

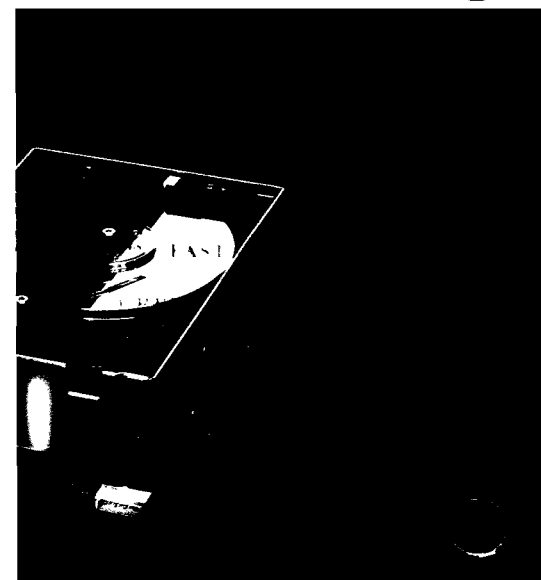
## Features

- 2.47, 2.21 and 1.69 Gbytes (unformatted)
- 300,000 hours MTBF/5-year warranty
- Fast and wide SCSI-2
- Single-ended and standard, wide or dual-port differential
- 500-microsecond controller overhead
- 5.5 ms latency
- 11.5 ms seek time (9.0 ms seek with HP C3010 option jumper)

## Technical Information

### Reliability

MTBF: 300,000 hours  
Service life: greater than 5 years  
Recoverable error rate: less than 10 errors in  $10^{13}$  bits transferred  
Unrecoverable error rate: less than 10 errors in  $10^{15}$  bits transferred  
Seek error rate: less than 10 errors in  $10^7$  seeks





## Specifications

	C3010	C3010 (9.0 ms seek)	C3009	C3007
Capacity				
Uniformatted	2473	1308	2213	1692
Formatted*	2003	1027	1792	1370
Per Track (bytes)				
Uniformatted	46,560-58,838	58,838	46,560-58,838	46,560-58,838
Formatted	38,912-49,152	49,152	38,912-49,152	38,912-49,152
Per Sector (bytes)				
Uniformatted*	612	612	612	612
Formatted*	512	512	512	512
Per Surface (Mbytes)				
Uniformatted	130.2	68.84	130.2	130.2
Formatted	105.4	54.06	105.4	105.4
Disks	10	10	9	7
Data Heads	19	19	17	13
Sectors/Tracks*	76-96	96	76-96	76-96
Cylinders**	2255	1100	2255	2255

\*Other configurations available.

\*\*Tracks reserved for spares have been removed.

## Performance

Channel transfer rate (burst):  
Asynchronous: 1.5 Mbytes/s to 2.5 Mbytes/s  
Synchronous: up to 20 Mbytes/s

Drive transfer rate: up to 42 Mbits/s

Seek time (includes settling):  
Average: 11.5 ms  
With option jumper (HP C3010): 9.0 ms  
Track-to-track: 2.5 ms  
Maximum: 22 ms

## Environmental Conditions

Shock:  
Operating: 6G (11 ms maximum without loss of data)  
Nonoperating: 30G (11 ms half-sine)

Vibration (5 to 500 Hz):  
Operating: .5G  
Nonoperating: .5G

Ambient temperature:  
Operating: 0° to 50° C (32° to 122° F)  
Nonoperating: -40° to 70° C (-40° to 158° F)

Relative humidity:  
Operating: 8 to 80%  
Nonoperating: 5 to 80%  
Maximum wetbulb: 28° C (82° F)

Altitude:  
Operating: -30.5 to 3,048 m (-100 to 10,000 ft)  
Nonoperating: -305 to 15,240 m (-1,000 to 50,000 ft)

Acoustic noise (while seeking):  
5.5 bels sound power (typical)

## Physical Specifications

Height: 83 mm (3.25 in.)  
Width: 146 mm (5.75 in.)  
Depth: 204 mm (8.0 in.)  
Dual-port depth: 227mm (8.9 in.)  
Weight: 3.4 kg (7.5 lbs) unit  
4.5 kg (10 lbs) shipping

## Power Requirements

Options***	001	002	012	022
+5Vdc (A)				
Running:	1.1	1.5	1.7	2.1
Seeking:	1.1	1.5	1.7	2.1
+12Vdc (A)				
Running:	2.1	2.1	2.1	2.1
Seeking:	2.7	2.7	2.7	2.7
Startup (max):	5.1	5.1	5.1	5.1
Power (W)				
Running:	31	33	34	36
Seeking:	38	40	41	43

\*\*\*Option 001 is single-ended; 002 is standard differential; 012 is wide differential; 022 is dual-port differential.

## SCSI Interface

Controller overhead:  
500 microseconds  
Buffer size: 256 kbytes  
Sector interleave: 1:1  
Logical block size: Variable

## Advanced Controller Features

SCSI-2 command interface:  
Reed-Solomon Error Correction Code (ECC)  
Read prefetch  
Glitch-free power on and power down operation  
Command queuing (depth 96)  
Dual-port SCSI  
Wide 16-bit SCSI

## SCSI-2 Commands Supported

Mode pages (1,2,3,4,8,9,A)  
Read data buffer  
Read long  
Synchronize cache  
Write data buffer  
Write long  
Write same

## SCSI-1 Messages Supported

Abort  
Abort tag  
Bus device reset  
Clear queue  
Command complete  
Disconnect  
Head of queue tag  
Identify  
Initiator detected error  
Link command complete  
Link with flag  
Message parity error  
Message reject  
No operation  
Ordered queue tag  
Save data pointers  
Simple queue tag  
Synchronous data transfer request

## SCSI-1 Commands Supported

Format unit  
Inquiry  
Mode select (6) and (10) byte  
Mode sense (6) and (10) byte  
Read (6) and (10) byte  
Read capacity  
Reassign block  
Receive diagnostic results  
Release  
Request sense  
Reserve  
Rezero unit  
Seek (6) and (10) byte  
Send diagnostics  
Start/stop unit  
Test unit ready  
Verify  
Write and verify  
Write (6) and (10) byte

Note: Customer unique requirements accommodated.

## Ordering Information

### Product Numbers

C3010 - 2.47-Gbyte disk drive  
C3009 - 2.21-Gbyte disk drive  
C3007 - 1.69-Gbyte disk drive  
(capacities are unformatted)

### Option Numbers

Option 001-specifies SCSI-2 standard fast single-ended controller  
Option 002-specifies SCSI-2 standard fast differential controller  
Option 012-specifies SCSI-2 wide fast differential controller  
Option 022-specifies SCSI-2 standard fast differential dual-port controller

Hewlett-Packard Company has been an international manufacturer of high reliability, high performance disk drives for over 20 years. Other 5.25-inch products available include:

- HP 97556, 97558 and 97560 Series
  - 804 megabytes, 1.26 and 1.6 gigabytes (unformatted)
  - ESDI and SCSI-2 interfaces
  - Single-ended or differential SCSI
- HP 97549T/P Series
  - 1.18 gigabytes (unformatted)
  - SCSI-2 interface
  - Single-ended or differential
- HP 9754X Series
  - 397-795 megabytes (unformatted)
  - ESDI, SCSI-1 and SCSI-2 interface
  - Single-ended or differential

3.5-inch disk products available include:

- HP C2247 Series
  - 1.05 gigabytes (formatted)
  - SCSI-2 interface
  - Single-ended, differential or wide differential
- HP C2233, C2234 and C2235 Series
  - 234, 328 and 422 megabytes (formatted)
  - SCSI-2 and ATA interfaces
  - Single-ended or differential SCSI-2

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