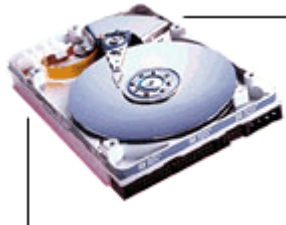

Subject: Detailed Specifications for the WD Caviar WD400BB (<http://www.wdc.com/products/>)



Detailed Specifications for the WD Caviar WD400BB

[Recommended Parameters](#)
[Physical Specifications](#)
[Performance Specifications](#)
[Physical Dimensions](#)
[Electrical Specifications](#)
[Environmental Specifications](#)

Recommended Setup Parameters

Cylinders*	16383
Heads	16
Sectors/Track	63
Landing Zone	16383
WPC	16383

** All EIDE drives greater than 8.4 GB use 16383 cylinders, 16 heads, and 63 SPT due to interface restrictions.*

Physical Specifications

Formatted Capacity*	40,021 MB
Interface	40-pin EIDE
Actuator Type	Rotary Voice Coil
Number of Platters	2
Data Surfaces	4
Number of Heads	4
Bytes Per Sector	512
User Sectors Per Drive	78,165,360
Servo Type	Embedded
Recording Method	Rate 16/17 PRML
ECC	Reed Solomon
Head Park**	Automatic

** Western Digital defines a megabyte (MB) as 1,000,000 bytes and a gigabyte (GB) as 1,000,000,000 bytes*

*** Turning the system power off causes the WD Caviar to perform an automatic head park operation..*

Performance Specifications

Average Seek (Read)	8.9 ms typical, 18 ms maximum
Average Seek (Write)	10.9 ms typical, 20ms maximum
Track to Track Seek	2.0 ms typical, 5 ms maximum
Full Stroke Seek	21 ms typical, 28 ms maximum
Index Pulse Period	8.3 ms (nominal)
Average Latency	4.2 ms (nominal)
Rotational Speed	7200 RPM (nominal)
Controller Overhead	0.3 ms average
Transfer Rate (Buffer to Host)	100 MB/s (Mode 5 Ultra ATA) 66.6 MB/s (Mode 4 Ultra ATA) 33.3 MB/s (Mode 2 Ultra ATA) 16.6 MB/s (Mode 4 PIO) 16.6 MB/s (Mode 2 multi-word DMA)
Transfer Rate (Buffer to Disk)	244 Mbits/s minimum 400 Mbits/s maximum
Interleave	1:1
Buffer Size	2 MB
Error Rate (Non-Recoverable)	<1 in 10 ¹⁴ bits read
Spindle Start Time	
- From Power-on to Drive Ready ¹	5.5 s typical, 9s maximum
Spindle Start Time	
- From Power-on to Rotational Speed ²	4.5 s typical, 7s maximum
Contact Start/Stop Cycles (CSS)	40,000 minimum

¹ Defined as the time from power-on to the setting of the Drive Ready and Seek Complete including calibration.

² Defined as the time from power-on to when the full spindle rotational speed is reached.

Physical Dimensions

Height	English: 1.028 inch MAX
	Metric: 26.1 mm MAX
Length	English: 5.787 inches MAX
	Metric: 147.0 mm MAX
Width	English: 4.00 inches (±0.01 inch)
	Metric: 101.6 mm (±0.25 mm)
Weight	English: 1.4 pounds (±0.14 pounds)
	Metric: .62 kg (±0.062 kg)

Electrical Specifications

Current Requirements and Power Dissipation

Operating Mode	RMS Current*		Power, Typical*
	12 VDC	5 VDC	
Spinup	1.8 A max	560 mA	18.4 W
Read/Write/Idle	350 mA	630 mA	7.5 W
Seek	870 mA	660 mA	13.7 W

Power Management Commands

Operating Mode	RMS Current*		Power, Typical*
	12 VDC	5 VDC	
Idle (E1H)	340 mA	610 mA	7.1 W
Standby (E0H)	25 mA	190 mA	1.3 W
Sleep (E6H)	25 mA	80 mA	0.7 W

Input Voltage Requirements

+5.0V ($\pm 5\%$) and 12.0V ($\pm 10\%$)

Ripple

	+12 VDC	+5 VDC
Maximum Frequency	200 mV (double amplitude) 0-30 MHz	100 mV (double amplitude) 0-30 MHz

Power Connectors and Cables

Power Connector	4-pin AMP (P/N 84069-1 or equivalent)
Mating Connector	Body (AMP 1-480424-0 or equivalent) Pins (AMP 60619-4 or equivalent)
Power Cable Wire Gauge	18 AWG (or heavier)

* All values are typical (25°C, 5.0V, and 12V input) except where specified as maximum.

Note: Current measurements cut off frequency at 1 kHz.

Environmental Specifications

Shock:	Operating 65G, 2 ms (write)
<i>Half sine wave, measured without shock isolation and without non-recoverable errors.</i>	Non-operating 250G, 2 ms
Vibration	Operating Linear 5-500 Hz, 0.25G (0 to peak) Random 10-300 Hz, 0.004 g ² /Hz
	Non-operating 5-20 Hz, 0.195 inches (double amplitude) 20-500 Hz, 4.0 G (0 to peak)
	Sweep Rate 0.5 octave/minute minimum
Drive Generated Vibration	Operating

	0.4 gm-mm maximum with the drive in an unconstrained condition.
Rotational Shock	Amplitude 20K rad/sec ²
	Duration 2 ms
Operating Temperature and Humidity	Temperature 5° C to 55° C (41°F to 131°F)
	Humidity 5-85% RH non-condensing 33°C (maximum wet bulb)
	Thermal Gradient 20°C/hour (maximum)
	Humidity Gradient 20%/hour (maximum)
Non-Operating Temperature and Humidity	Temperature -40° C to 60° C (-40°F to 140°F)
	Humidity 5-95% RH non-condensing 33°C (maximum wet bulb)
	Thermal Gradient 30°C/hour (maximum)
	Humidity Gradient 20%/hour (maximum)
Altitude	Operating -1,000 feet to 10,000 feet (-300M to 3,050M)
	Non-Operating -1,000 feet to 40,000 feet (-300M to 12,200M)
Acoustics	Idle Mode* 35 dBA (standard) 31 dBA (sound logic)
	Seek Mode 0** 38 dBA (standard) 41 dBA (sound logic)
	Seek Mode 3** 35 dBA (standard) 32 dBA (sound logic)
Reliability	AFR <0.8%
	Component Design Life 5 years

* No audible pure tones.

** Random seek at a rate of 26 seeks per second. Mode 0 and Mode 3 supports the Automatic Accoustic Management feature.

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