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Specifications for the WD Caviar® WD205AA

Recommended Parameters

Physical Specifications

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Recommended Setup Parameters

Cylinders ¹	16383
Heads	16
Sectors/Track	63
Landing Zone	16383
WPC	16383
Jumper Setting Information	Ten Pin Drive

10-pin Drives

9 7 5 3 1

10 8 6 4 2

Single
(Neutral Position)
Can be jumpered
5 & 3 OR 6 & 4

9 7 5 3 1

10 8 6 4 2

Single
(Standard Installation)

9 7 5 3 1

10 8 6 4 2

Dual (Master)

9 7 5 3 1

10 8 6 4 2

Dual (Slave)

9 7 5 3 1

10 8 6 4 2

Cable Select

1

All EIDE drives 8.4 GB and larger use 16383 cylinders, 16 heads and 63 SPT due to interface restrictions. [Click here](#) for more information.

Physical Specifications

Formatted Capacity ¹	20,520 MB
Interface	40-pin EIDE
Actuator Type	Rotary Voice Coil
Number of Disks	3
Data Surfaces	6
Number of Heads	6
Bytes Per Sector	512
User Sectors Per Drive	40,079,088
Servo Type	Embedded
Recording Method EPR4	Rate 16/17 PRML
ECC	Reed Solomon
Head Park ²	Automatic

PRML - Partial Response Maximum Likelihood

EIDE - Enhanced Integrated Drive Electronics

1

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

2

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

Performance Specifications

Average Seek	
- Read	9.5 ms typical, 15 ms maximum
- Write	11.5 ms typical, 17 ms maximum

Track-to-Track Seek	2.0 ms typical, 5 ms maximum
Full Stroke Seek	19 ms typical, 23 ms maximum
Index Pulse Period	11.11 ms (nominal)
Average Latency	5.5 ms (nominal)
Rotational Speed	5400 RPM (nominal)
Controller Overhead	0.3 ms average
Data Transfer Rate (maximum)	
- Buffer to Host	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)
- Buffer to Disk	133.33 Mbits/s minimum 233.57 Mbits/s maximum
Interleave	1:1
Buffer Size	2 MB
Error Rate - Unrecoverable	<1 in 10 ¹⁴ bits read
Spindle Start Time	
- From Power-on to Drive Ready ¹	6 s typical, 16 s maximum
- From Power-on to Rotational Speed ²	4.5 s typical, 12 s maximum
Spindle Stop Time	4 s typical
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:	1.00 inch ±0.02 inch
	Metric:	25.4 mm ±0.51 mm
Length	English:	5.75 inches ±0.02 inch
	Metric:	146.05 mm ±0.51 mm
Width	English:	4.00 inches ±0.02 inch
	Metric:	101.6 mm ±0.51 mm
Weight	English:	1.1 pounds ±0.11 pounds
	Metric:	0.500 kg ±0.050 kg

Electrical Specifications

Current Requirements and Power Dissipation

Operating Mode	RMS Current		Power, Typical ¹
	12 VDC	5 VDC	
Spinup	1.8 A max	530 mA	24.3 W
Read/Write/Idle	240 mA	660 mA	6.18 W
Seek	580 mA	600 mA	9.96 W

Power Management Commands

Operating Mode	RMS Current ¹		Power, Typical ¹
	12 VDC	5 VDC	
Idle (E1H)	240 mA	660 mA	6.18 W
Standby (E0H)	30 mA	192 mA	1.32 W
Sleep (E6H)	30 mA	96 mA	0.84 W

Input Voltage Requirements

+5.0V (±5%) and 12.0V (±10%)

Ripple

	+12 VDC	+5 VDC
Maximum	200 mV (double amplitude)	100 mV (double amplitude)
Frequency	0-20 MHz	0-20 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)

¹ 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 ¹

Operating	20 G, 2 ms
Non-operating	200 G, 2 ms
Vibration	
Operating	5-20 Hz, 0.037 inches (double amplitude) 20-300 Hz, 0.75 G (0 to peak)
Non-operating	5-20 Hz, 0.195 inches (double amplitude) 20-500 Hz, 4.0 G (0 to peak)
Sweep Rate	One-octave/minute minimum
Drive Generated Vibration	
Operating	0.10 G maximum with the drive in an unconstrained condition.
Rotational Shock Non-Operating	
Amplitude	15K rad/sec ²
Duration	2 ms
Operating Temperature and Humidity	
Temperature ²	5°C to 55°C (41°F to 131°F) 5°C to 65°C (case temp.)
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 ³	-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	-1000 feet to 10,000 feet (-305M to 3,050M)
Non-Operating	-1000 feet to 40,000 feet (-305M to 12,200M)
Acoustics	
Idle Mode ⁴	33 dBA average, 37 dBA maximum
Seek Mode ⁵	39 dBA average, 43 dBA maximum
Reliability Specifications	
AFR	<0.8%
MTBF	500,000 Power On Hours
MTTR	10 minutes (typical)
Component Design Life	5 years

¹ Half sine wave, measured without shock isolation and without non-recoverable errors.
² The system environment must allow sufficient air flow.
³ To ensure test is non-condensing, set chamber RH to 85% maximum. To maintain 85% max, set dry bulb to 35.5°C which maintains 33°C wet bulb.
⁴ No audible pure tones.
⁵ Random seek at a rate of 26 seeks per second.

