

Answer ID 1388
Products Internal Drives Serial ATA Drives
Category Specifications & Documents
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Specifications for the 400GB Caviar SE16 Serial ATA hard drive (model WD4000KD)

Question

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Answer

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Physical Specifications

Model Number	WD4000KD
Formatted Capacity ¹	400,088 MB
Used Sectors Per Drive	781,422,768
Interface	1.5 Gb/s serial interface
Bytes Per Sector	512
Dedicated Landing Zone	Yes
Actuator Latch/Auto Park	Yes

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CAPACITY

As used for storage capacity, one megabyte (MB) = one million bytes, one gigabyte (GB) = one billion bytes, and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on operating environment.

BUFFER/CACHE

As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes.

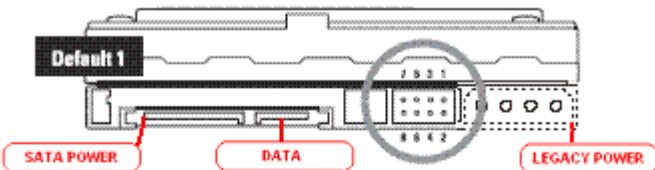
TRANSFER RATE/INTERFACE

As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabit per second (Gb/s) = one billion bits per second.

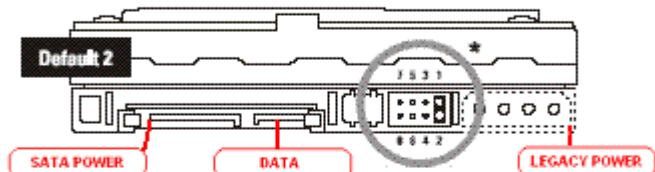
Note: WD SATA drives ship from the factory with either Default 1 or Default 2 (see below) set as the standard configuration.

Some drives may not have Legacy power connectors

- 1 Standard configuration 1 (no jumper added - spread spectrum clocking disabled).

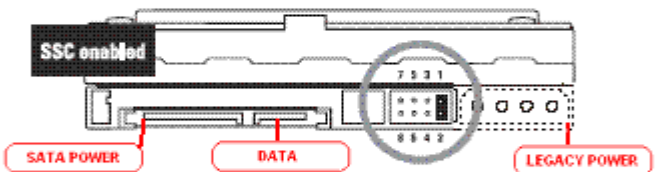


- 2 Standard configuration 2 (jumper across pins 1&2 - spread spectrum clocking disabled).

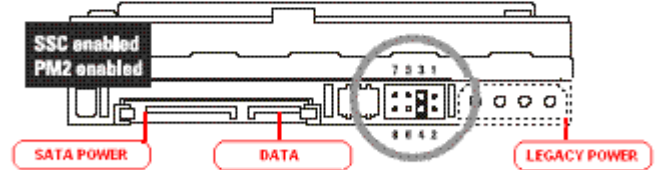


Normal storage placement. In this position, the jumper has no effect on the drive operation.

Spread spectrum clocking enabled.

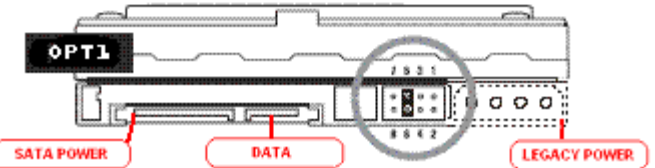


Spread spectrum clocking enabled, power management (PM2) enabled. Controlled spinup via spinup command per ATA standard.



⏏ Jumper pins ⏏ Jumper added

OPT1 Enabled. This will cause Second Generation Serial ATA hard drives to revert to a 150MB/s transfer rate limitation.



Performance Specifications

Data Transfer Rate (maximum)

- Buffer to Host

1.5 Gb/s max²

Average Read Seek

8.9 ms (average)

Track-to-track Seek³

2.0 ms (average)

Full Stroke Read Seek³

21.0 ms (average)

Average Latency	4.20 ms
Rotational Speed	7200 RPM
Read Cache	Adaptive
Write Cache	Yes
Buffer	16 MB
Drive Ready Time	12.0 sec average
Start/Stop Cycles	50,000 minimum
Error Rate (non-recoverable)	<1 in 10 ¹⁴ bits read
LBA support	Yes

²Maximum burst rate running the specified PIO, DMA, Ultra ATA, or Serial ATA transfer mode.

³On reads and writes.

Physical Dimensions

Height	1.028 in. (25.4 mm) max
Length	5.787 in. (147.0 mm) max
Width	4.0 in. (101.6 mm) ± .01 in.
Weight	1.32 lb. (0.64 kg) ± 10%

Power Requirements⁴

Mode	12 V (± 10%)	5 V (± 5%)	Power
Read/Write ⁴	450 mA	800 mA	9.5 W
Idle	430 mA	730 mA	8.75 W
Standby	20 mA	270 mA	1.6 W
Sleep	20 mA	250 mA	1.5 W

⁴20% duty cycle.

Environmental Specifications⁵

Shock

Operating (2ms)	30G (write), 65G (read)
Non-operating (2ms)	250G

Half sine wave measured in 2 ms duration, measured without isolation.

Vibration

Operating	- Random	0.004 g ² /Hz (10 to 300 Hz)
	- Linear	20-300 Hz, 0.75G (0 to peak)
Non-operating	- Linear	5-20 Hz, 0.195 inches (dbl amp) 20-500 Hz, 4G (0 to peak)

Operating Temperature and Humidity

Temperature	5°C to 55°C (41°F to 131°F)
Humidity	5-95% RH non-condensing
Thermal Gradient	20°C/hour (maximum)

Non-Operating Temperature and Humidity

Temperature	-40°C to 65°C (-40°F to 149°F)
Humidity	5-95% RH non-condensing
Thermal Gradient	30°C/hour (maximum)

Acoustics (average) 4-platter

Idle Mode ⁶	28 dBA (average)
Seek Mode 0 ⁶	33 dBA (average)
Seek Mode 3 ⁶	29 dBA (average)
Warranty Period	Warranty Length

⁵No non-recoverable errors during operating tests or after non-operating tests.

⁶Sound power level.