

Data Sheet

# Pipeline HD™

The industry's leading combination of video streaming and low-power performance

**160 GB, 250 GB, 320 GB, 500 GB and 1 TB • SATA**

## Key Features and Benefits

- Eco-friendly power savings enable the most energy-efficient and cost-effective system designs.
- Industry-leading reliability of 0.55% AFR in an always-on environment supports longevity expectations of consumer and commercial video applications.
- 75°C operating temperature capability for improved system reliability
- Video streaming optimized to support at least 10 simultaneous high-definition video streams for multi-room DVR applications
- Seagate SoftSonic™ motor technology enables years of ultra-quiet, worry-free operation with acoustics performance as low as 1.9 bels.
- Up to 1-TB capacity enabling up to 200 hours of HD storage or 1000 hours of SD television recording
- Sweet-spot capacities enable premium television services such as video on demand, high-definition storage and multi-room streaming for DVRs and media centers.
- Seagate Think Green™ sustainability goes beyond green with improved reliability, low power consumption, leading recycling programs, RoHS compliance, PVC free, halogen free and brominated flame retardant free



## Best-Fit Applications

- Consumer DVR and media center applications
- Embedded surveillance DVR (SDVR) systems
- Home theater PCs, karaoke and audio jukeboxes
- Cable, satellite and IPTV set-top boxes

Specifications	1 TB <sup>1</sup>	500 GB <sup>1</sup>	320 GB <sup>1</sup>	250 GB <sup>1</sup>	160 GB <sup>1</sup>
Model Number	ST31000322CS <sup>2</sup>	ST3500312CS <sup>2</sup> , ST3500321CS <sup>3</sup>	ST3320311CS <sup>2</sup> , ST3320310CS <sup>3</sup>	ST3250312CS <sup>2</sup>	ST3160316CS <sup>2</sup> , ST3160310CS <sup>3</sup>
Interface	SATA 3Gb/s	SATA 3Gb/s	SATA 3Gb/s	SATA 3Gb/s	SATA 3Gb/s
<b>Performance</b>					
Cache, Multisegmented (MB)	8	8	8	8	8
SATA Data Transfer Rate (Gb/s, max)	3.0	3.0	3.0	3.0	3.0
Simultaneous SDTV Streams Supported (Assumes 256K host buffer per stream)	10	10	10	10	10
Simultaneous HDTV Streams Supported (Assumes 2-MB host buffer per stream)	10	10	10	10	10
Power-On to Ready (typical, sec)	<12	<6 <sup>2</sup> , <12 <sup>3</sup>	<6	<6	<6
Standby to Ready (typical, sec)	<12	<6 <sup>2</sup> , <12 <sup>3</sup>	<6	<6	<6
Maximum External Transfer Rate (MB/s)	300	300	300	300	300
<b>Voltage</b>					
Voltage Tolerance (including noise)	5V ± 5% 12V ± 10%	5V ± 5% 12V ± 10%	5V ± 5% 12V ± 10%	5V ± 5% 12V ± 10%	5V ± 5% 12V ± 10%
<b>Environmental</b>					
Halogen Free	Yes	Yes <sup>2</sup> , No <sup>3</sup>	Yes <sup>2</sup> , No <sup>3</sup>	Yes	Yes <sup>2</sup> , No <sup>3</sup>
Ambient Temperature (°C)					
Operating (ambient min)	0	0	0	0	0
Operating (drive case max)	75	75	75	75	75
Nonoperating (ambient min)	-40	-40	-40	-40	-40
Nonoperating (ambient max)	70	70	70	70	70
Temperature Gradient, Operating/Nonoperating (°C per hour max)	20/30	20/30	20/30	20/30	20/30
Relative Humidity, Operating/Nonoperating (non-condensing, %)	5 to 90/5 to 95	5 to 90/5 to 95	5 to 90/5 to 95	5 to 90/5 to 95	5 to 90/5 to 95
Web Bulb Temperature, Operating/Nonoperating (°C)	37.7/40.0	37.7/40.0	37.7/40.0	37.7/40.0	37.7/40.0
Shock					
Operating: 2 ms (max, Gs)	70	70	70	70	70
Nonoperating: 1 ms (max, Gs)	350	350 <sup>2</sup> , 300 <sup>3</sup>	350	350	350
Vibration, Operating					
5-22 Hz (limited displacement) (Gs)	0.50	0.50 <sup>2</sup> , 0.25 <sup>3</sup>	0.50	0.50	0.50 <sup>2</sup> , 0.25 <sup>3</sup>
22-350 Hz (Gs)	0.50	0.50	0.50	0.50	0.50
350-500 Hz (Gs)	0.25	0.25	0.25	0.25	0.25
Vibration, Nonoperating					
5-350 Hz (limited displacement) (Gs)	5.00	5.00	5.00	5.00	5.00
350-500 Hz (Gs)	1.00	1.00	1.00	1.00	1.00
<b>Power Management</b>					
Startup Current (12 V typical, amps)	2.0	2.0	2.0	2.0	2.0
Consumer Storage Profile (W)	4.1	3.4 <sup>2</sup> , 5.0 <sup>3</sup>	3.4 <sup>2</sup> , 4.7 <sup>3</sup>	3.4	3.4 <sup>2</sup> , 4.7 <sup>3</sup>
Idle Average (W)	3.8	3.0 <sup>2</sup> , 4.3 <sup>3</sup>	3.0	3.0	3.0
Standby/Sleep Mode (typical, W)	0.7	0.7	0.6	0.7	0.57
<b>Acoustics</b>					
PVR Profile (typical/max, bels)	2.1/2.4	1.9/2.0 <sup>2</sup> , 2.1/2.4 <sup>3</sup>	1.9/2.0 <sup>2</sup> , 1.9/2.1 <sup>3</sup>	1.9/2.0	1.9/2.0 <sup>2</sup> , 1.9/2.1 <sup>3</sup>
<b>Reliability</b>					
Nonrecoverable Read Errors per Bits Read	1 sector per 10E15	1 sector per 10E15 <sup>2</sup> , 1 sector per 10E14 <sup>3</sup>	1 sector per 10E15 <sup>2</sup> , 1 sector per 10E14 <sup>3</sup>	1 sector per 10E15	1 sector per 10E15 <sup>2</sup> , 1 sector per 10E14 <sup>3</sup>
Annualized Failure Rate (AFR)	0.55%	0.55% <sup>2</sup> , 0.57% <sup>3</sup>	0.55% <sup>2</sup> , 0.57% <sup>3</sup>	0.55%	0.55% <sup>2</sup> , 0.57% <sup>3</sup>
Contact Start-Stop Cycles (25°C, 50% relative humidity)	50,000	50,000	50,000	50,000	50,000
<b>Dimensions</b>					
Height (mm/in, max)	26.1/1.028	20.0/0.795 <sup>2</sup> , 26.1/1.028 <sup>3</sup>	20.0/0.795	20.0/0.795	20.0/0.795
Width (mm/in, max)	101.85/4.010	101.85/4.010	101.85/4.010	101.85/4.010	101.85/4.010
Depth (mm/in, max)	146.99/5.787	146.99/5.787	146.99/5.787	146.99/5.787	146.99/5.787
Weight (g/lb, max)	600/1.323	380/0.838 <sup>2</sup> , 530/1.168 <sup>3</sup>	415/0.915 <sup>2</sup> , 380/0.838 <sup>3</sup>	380/0.838	415/0.915 <sup>2</sup> , 380/0.838 <sup>3</sup>

<sup>1</sup> One gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes when referring to hard drive capacity.  
<sup>2</sup> 500-GB/disk model  
<sup>3</sup> 320-GB/disk model

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