

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 the longevity expectations of consumer and commercial video applications
- 75°C operating temperature capability for improved system reliability
- Video streaming optimised 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 acoustic performance as low as 1.9 bels
- Up to 1-TB capacity enabling up to 200 hours of HD storage or 1,000 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 centres
- Seagate Think Green™ sustainability goes beyond green with improved reliability, low power consumption, leading recycling programmes, RoHS compliance, PVC-free, halogen-free and brominated flame retardant-free



### Best-fit Applications

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

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| 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> ,<br>ST3500321CS <sup>3</sup>               | ST3320311CS <sup>2</sup> ,<br>ST3320310CS <sup>3</sup>               | ST3250312CS <sup>2</sup> | ST3160316CS <sup>2</sup> ,<br>ST3160310CS <sup>3</sup>               |
| Interface   | SATA 3-Gb/s               | SATA 3-Gb/s  | SATA 3-Gb/s  | SATA 3-Gb/s              | SATA 3-Gb/s  |
| <b>Performance</b>  |                           |  |  |                          |  |
| Cache, Multi-segmented (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 2MB 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%<br>12V ±10%        | 5V ±5%<br>12V ±10%   | 5V ±5%<br>12V ±10%   | 5V ±5%<br>12V ±10%       | 5V ±5%<br>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   |
| Non-operating (ambient min)   | -40                       | -40  | -40  | -40                      | -40  |
| Non-operating (ambient max)   | 70                        | 70   | 70   | 70                       | 70   |
| Temperature Gradient, Operating/Non-operating (°C per hour max)           | 20/30                     | 20/30  | 20/30  | 20/30                    | 20/30  |
| Relative Humidity, Operating/Non-operating (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  |
| Wet Bulb Temperature, Operating/Non-operating (°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   |
| Non-operating: 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, Non-operating  |                           |  |  |                          |  |
| 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>  |                           |  |  |                          |  |
| Non-recoverable Read Errors per Bits Read                                 | 1 sector per 10E15        | 1 sector per 10E15 <sup>2</sup> ,<br>1 sector per 10E14 <sup>3</sup> | 1 sector per 10E15 <sup>2</sup> ,<br>1 sector per 10E14 <sup>3</sup> | 1 sector per 10E15       | 1 sector per 10E15 <sup>2</sup> ,<br>1 sector per 10E14 <sup>3</sup> |
| Annualised 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 disc model

<sup>3</sup> 320-GB disc model

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