

Cervoz Industrial SSD

2.5" SATA

Supreme Series (SLC)

S310 Family

Product Datasheet



Date: 2015.01.05

Revision: 1.0



Revision History

| Date | Revision | Description |
|------------|----------|----------------|
| 2015.01.05 | 1.0 | First Released |



Table of Contents

| | |
|--|-----------|
| 1. Product Overview | 4 |
| 1.1 Introduction..... | 4 |
| 1.2 Feature..... | 4 |
| 1.3 Product Appearance & Models..... | 5 |
| 2. Product Specifications | 6 |
| 2.1 General Specifications..... | 6 |
| 2.2 Electronic Specifications..... | 6 |
| 2.2.1 Block Diagram..... | 6 |
| 2.2.2 Pin Assignment..... | 7 |
| 2.3 Environmental Specifications..... | 8 |
| 2.4 Mechanical Specifications..... | 8 |
| 3. Supported Command | 9 |
| 3.1 List of Command Sets..... | 9 |
| 4. Part No. Decoder | 10 |
| 4.1 Part No. Decoder..... | 10~11 |

1. Product Overview

1.1 Introduction

Cervoz Industrial 2.5" SATA SSD S310 is a high capacity Solid State Disk product that is in compliance with the 2.5" form factor and SATA III standards. The device design is based on the 7pin for data segment and 15pin for power segment standards.

S310 uses superior quality, preselected single-level cell (SLC) NAND flash memory from the industry leading manufacturer Toshiba. This product includes both standard temperature range and wide temperature range options with various capacities to choose from.

S310 offers outstanding performance and reliability, ideal for extreme applications in mission critical environments. Factory Automation, Transportation, Networking and Video Surveillance all benefit from this superior read/write endurance and data retention.

1.2 Feature

- Compliant with SATA III 6.0Gb/s
- SLC NAND flash memory
- Capacity: 4GB ~ 64GB
- Operating as boot disk
- Product includes Standard Temperature range & Wide Temperature range
- Static and dynamic wear leveling
- Bad block management
- S.M.A.R.T & TRIM command

1.3 Product Appearance & Models

Cervoz Industrial 2.5" SATA SSD S310



| S310 Family Standard Temp. (0°C ~ 70°C) Model No. | S310 Family Wide Temp. (-40°C ~ 85°C) Model No. | Capacity |
|---|---|----------|
| CIS-2SS310THT004GS | CIS-2SS310THT004GW | 4GB |
| CIS-2SS310THT008GS | CIS-2SS310THT008GW | 8GB |
| CIS-2SS310THT016GS | CIS-2SS310THT016GW | 16GB |
| CIS-2SS310TIT032GS | CIS-2SS310TIT032GW | 32GB |
| CIS-2SS310TJT064GS | CIS-2SS310TJT064GW | 64GB |

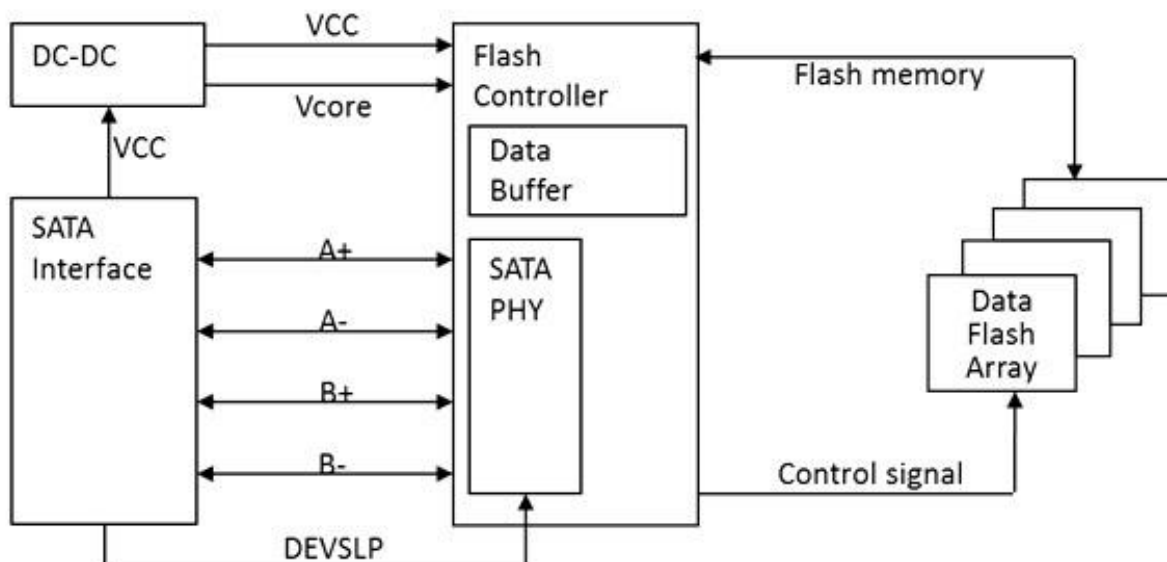
2. Product Specifications

2.1 General Specifications

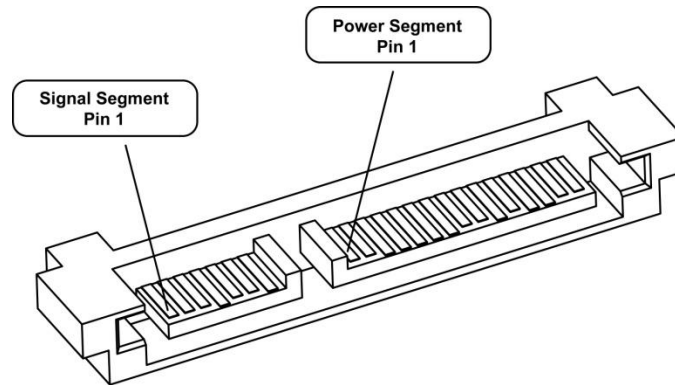
| | |
|-----------------------------|---|
| Form Factor | 2.5inch |
| Interface | SATA III 6.0Gb/s (backward compatible to 3.0Gb/s, 1.5Gb/s) |
| Connector | SATA (7 + 15 pin) |
| NAND Flash Type | SLC |
| Capacity | 4GB/8GB/16GB/32GB/64GB |
| Sequential Read | up to 500MB/s |
| Sequential Write | up to 150MB/s |
| ECC Scheme | up to 72bits / 1K Byte |
| MTBF | 2,000,000 hours |
| Low Power Management | DEVSLP mode DIPM / HIPM mode |
| Supply Voltage | +5V DC +/-5% |
| Power Consumption | Active mode: < 1480mW Idle mode: < 280mW DEVSLP mode: < 5mW |
| Dimension (LxWxH) | 100.10*69.85*7.00mm |

2.2 Electronic Specifications

2.2.1 Block Diagram



2.2.2 Pin Assignment



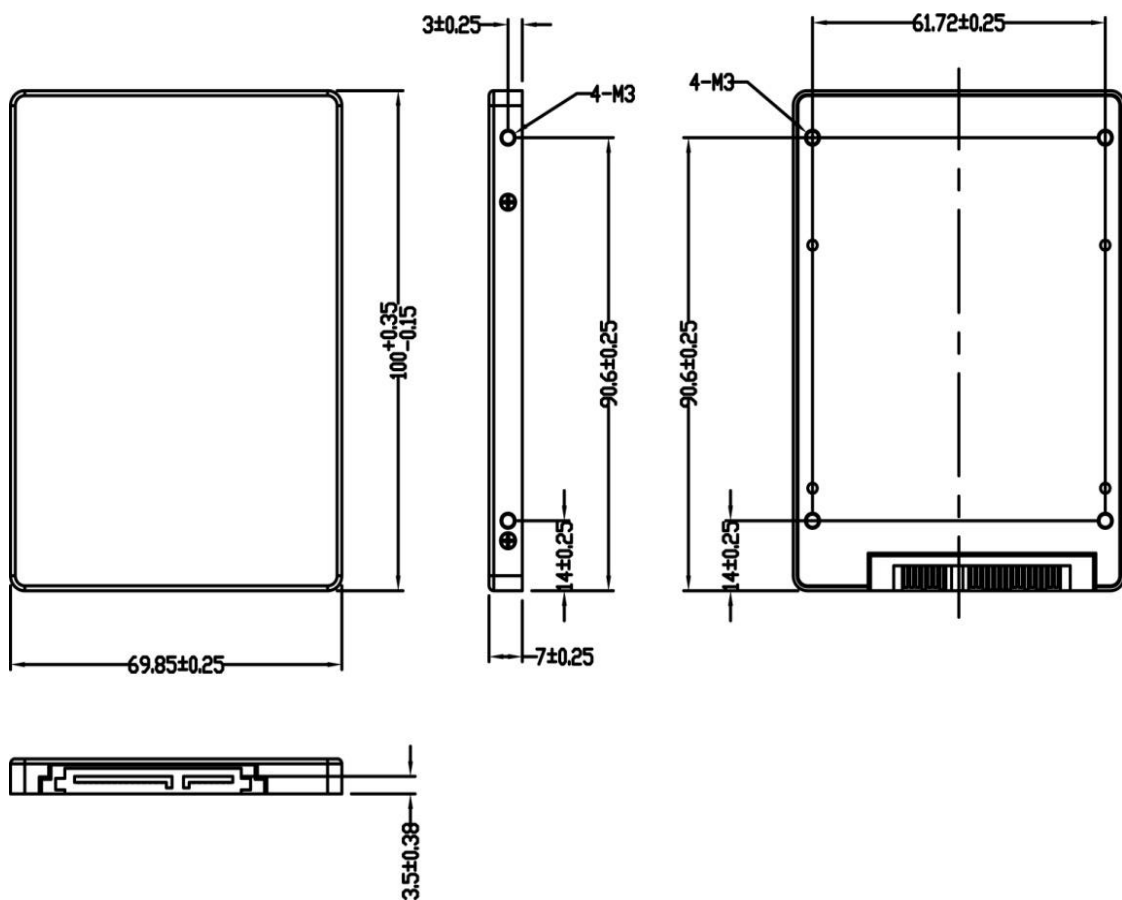
| Group | Pin No. | Function | Description |
|--------------------------|---------|----------|----------------------------|
| Signal Segment | S1 | GND | Ground |
| | S2 | A+ | Differential Signal Pair A |
| | S3 | A – | Differential Signal Pair A |
| | S4 | GND | Ground |
| | S5 | B – | Differential Signal Pair B |
| | S6 | B+ | Differential Signal Pair B |
| | S7 | GND | Ground |
| Key & Spacing | | | |
| Power Segment | P1 | NC | Not Used (3.3V Power) |
| | P2 | NC | Not Used (3.3V Power) |
| | P3 | DEVSLP | Device Sleep Mode |
| | P4 | GND | Ground |
| | P5 | GND | Ground |
| | P6 | GND | Ground |
| | P7 | V5 | 5V Power, Pre-charge |
| | P8 | V5 | 5V Power |
| | P9 | V5 | 5V Power |
| | P10 | GND | Ground |
| | P11 | Reserved | Reserved |
| | P12 | GND | Ground |
| | P13 | NC | Not Used |
| | P14 | NC | Not Used |
| | P15 | NC | Not Used |

2.3 Environmental Specifications

| Type | | Value |
|--------------------|---------------------------------|------------------------|
| Temperature | Standard Temperature Operating: | 0°C~70°C |
| | Standard Temperature Storage: | -40°C~85°C |
| | Wide Temperature Operating: | -40°C~85°C |
| | Wide Temperature Storage: | -50°C~95°C |
| Humidity | Operating & Storage | 10~95%, Non-Condensing |
| Vibration | Operating | 20G, 10Hz~2000Hz |
| Shock | Operating | 1500G, 0.5ms |

2.4 Mechanical Specifications

| Type | Value |
|-------------|--------------------|
| Form Factor | 2.5" SATA |
| Length | 100.10mm +/-0.25mm |
| Width | 69.85mm +/-0.25mm |
| Thickness | 7.00mm +/-0.25mm |



3. Supported Command

3.1 List of Command Sets

| Code | Description | Code | Description |
|---------|-----------------------------------|------|---------------------------|
| 00h | NOP | 97h | IDLE |
| 06h | Data Set Management | 98h | CHECK POWER MODE |
| 10h-1Fh | Recalibrate | 99h | SLEEP |
| 20h | Read Sectors | B0h | SMART |
| 21h | Read Sectors without Retry | B1h | DEVICE CONFIGURATION |
| 24h | Read Sectors EXT | C4h | Read Multiple |
| 25h | Read DMA EXT | C5h | Write Multiple |
| 27h | Read Native Max Address EXT | C6h | Set Multiple Mode |
| 29h | Read Multiple EXT | C8h | Read DMA |
| 2Fh | Read Log EXT | C9h | Read DMA without Retry |
| 30h | Write Sectors | CAh | Write DMA |
| 31h | Write Sectors without Retry | CBh | Write DMA without Retry |
| 34h | Write Sectors EXT | CEh | Write Multiple FUA EXT |
| 35h | Write DMA EXT | E0h | Standby Immediate |
| 37h | Set Native Max Address EXT | E1h | Idle Immediate |
| 38h | CFA WRITE SECTORS WITHOUT ERASE | E2h | Standby |
| 39h | Write Multiple EXT | E3h | Idle |
| 3Dh | Write DMA FUA EXT | E4h | Read Buffer |
| 3Fh | Write Long EXT | E5h | Check Power Mode |
| 40h | Read Verify Sectors | E6h | Sleep |
| 41h | Read Verify Sectors without Retry | E7h | Flush Cache |
| 42h | Read Verify Sectors EXT | E8h | Write Buffer |
| 45h | WRITE UNCORRECTABLE EXT | EAh | Flush Cache EXT |
| 60h | Read FPDMA Queued | ECh | Identify Device |
| 61h | Write FPDMA Queued | EFh | Set Features |
| 70h-7Fh | Seek | F1h | Security Set Password |
| 90h | Execute Device Diagnostic | F2h | Security Unlock |
| 91h | Initialize Device Parameters | F3h | Security Erase Prepare |
| 92h | Download Microcode | F4h | Security Erase Unit |
| 93h | DOWNLOAD MICROCODE DMA | F5h | Security Freeze Lock |
| 94h | STANDBY IMMEDIATE | F6h | Security Disable Password |
| 95h | IDLE IMMEDIATE | F8h | Read Native Max Address |
| 96h | STANDBY | F9h | Set Max Address |

4. Part No. Decoder

4.1 Part No. Decoder

| 1 | - | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------|---|-------------|----------------|---|-------------|----------------|-------------|-----------------|-----------------|
| Product Line | - | Form Factor | Product Series | Cervoz Family Code (Bus / Internal Control) | Flash Brand | Flash Capacity | Die Package | Module Capacity | Operating Temp. |
| XXX | - | XX | X | XXX | X | X | X | XXXX | X |

1. Product Line

| | |
|-----|-----------------------------------|
| CIS | Cervoz Industrial SSD |
| CIM | Cervoz Industrial Memory Card |
| CIE | Cervoz Industrial Embedded Module |

2. Form Factor

| | |
|----|------------------------------|
| 2S | 2.5" SATA |
| 2P | 2.5" PATA |
| CF | CompactFlash |
| CA | CFast |
| MS | mSATA |
| HS | Half Slim |
| 0V | PATA Disk 40pin Vertical |
| 4V | PATA Disk 44pin Vertical |
| 7T | SATA Disk 7pin Vertical Tall |

3. Product Series

| | |
|---|--------------------------|
| S | Supreme Series (SLC) |
| R | Reliance Series (RO-MLC) |
| M | Momentum Series (MLC) |

4. Cervoz Family Code

Bus and Internal Control for Cervoz Product Families

5. Flash Brand

| | |
|---|---------|
| M | Micron |
| T | Toshiba |

6. Flash Capacity

| | |
|---|-------|
| A | 256Mb |
| B | 512Mb |
| C | 1Gb |
| D | 2Gb |
| E | 4Gb |
| F | 8Gb |
| G | 16Gb |
| H | 32Gb |
| I | 64Gb |

| | |
|---|-------|
| J | 128Gb |
| K | 256Gb |
| L | 512Gb |
| M | 1Tb |

7. Die Package

| | |
|---|------|
| T | TSOP |
| B | BGA |

8. Module Capacity

| | |
|------|-------|
| 128M | 128MB |
| 256M | 256MB |
| 512M | 512MB |
| 001G | 1GB |
| 002G | 2GB |
| 004G | 4GB |
| 008G | 8GB |
| 016G | 16GB |
| 032G | 32GB |
| 064G | 64GB |
| 128G | 128GB |
| 256G | 256GB |
| 512G | 512GB |

9. Operating Temperature

| | |
|---|--------------------------------------|
| S | Standard Grade (0~ +70°C) |
| W | Wide Temperature Grade (-40 ~ +85°C) |